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THE CEREAL REVIEW

OFFICE OF CEREAL INVESTIGATIONS

BUREAU OF PLANT INDUSTRY.

U. S. DEPARTMENT OF AGRICULTURE.

VOLUME 9.

JAN - 5

1917.

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January 5, 1917.

OFFICE NOTES.

Second page proof of Farmers' Bulletin 786, Fall-Sown Grains in Maryland and Virginia, by T. R. Stanton, was read during the week of January 1.

Messrs. Chas. W. Hungerford, A. G. Johnson, J. H. Parker, and Chas. S. Reddy arrived in Washington during the week of January 1 to spend some time in laboratory work in cereal disease investigations.

Mr. J. Mitchell Jenkins arrived in Washington on January 2 to spend several weeks in the preparation of his annual report and in laboratory work with rice investigations.

Dr. Leon J. Cole, Professor of Experimental Breeding at the University of Wisconsin, was a visitor at the Office on January 5.

The following members of the Office attended the meetings of the American Association for the Advancement of Science in New York City, during the week of December 25: F. R. Babcock, M. A. Carleton, H. B. Humphrey, C. W. Hungerford, A. G. Johnson, C. E. Leighty, J. H. Martin, J. H. Parker, F. J. Pierneisel, A. A. Potter, C. S. Reddy, E. C. Stakman, and W. H. Tisdale.

This number of The Cereal Review contains a complete directory of the members of the Office of Cereal Investigations both in Washington and in the field.

FIELD NOTES.

NORTH DAKOTA:

Dickinson Substation. Dec. 30. The weather during the month of December has been cold, with a mean temperature of 5.3 degrees, as compared with a normal mean temperature of 17.8 degrees. Maximum temperature, 58 degrees (Dec. 3); minimum, -32 degrees (Dec. 29); precipitation, 0.98 inch. About 10 inches of snow fell, mostly during the blizzard of Dec. 24-26. At present the snow is 8 inches deep, affording considerable protection to fall-sown grain. According to reports of the recent severe blizzard the snow is deeper in other parts of the State. The precipitation for the past year was 18.23 inches, as compared with a normal of 15.8 inches.

CALIFORNIA:

Plant Introduction Garden (Chico). Dec. 16. The seeding of cereals has been finished. Twenty-one varieties of wheat were replicated in plats four times and thirteen varieties of barley were replicated in plats three times. The nursery consists of more than 2,000 rows. All of the seedings were made under excellent conditions and good results may be expected.

DIRECTORY, OFFICE OF CEREAL INVESTIGATIONS.

Mark Alfred Carleton, Cerealist in Charge.

Adams, Ernest L.,	Assistant Agronomist, cooperative rice investigations, Biggs Rice Field Station, Biggs, Cal., and cooperative cereal investigations, Plant Introduction Garden, Chico, Cal.
Aicher, Louis C.,	Assistant Agronomist, cooperative cereal investigations, Aberdeen Substation, Aberdeen, Idaho.
Alexander, Lee,	Collaborator, cooperative cereal investigations, Minnesota agricultural experiment station, University Farm, St. Paul, Minn.
Anthony, Stephen,	Technologist in Barley Investigations.
Babcock, F. Ray,	Scientific Assistant, cooperative cereal investigations, Williston Substation, Williston, N. Dak.
Ball, Carleton R.,	Agronomist in Charge of Western Wheat Investigations.
Bengel, William G.,	Messenger.
Breithaupt, Le Roy,	Scientific Assistant, cooperative cereal investigations, Harney County Dry Farming Substation, Burns, Oreg.
Brinsmade, John C., jr.	Scientific Assistant, cooperative flax investigations, Northern Great Plains Field Station, Mandan, N. Dak.
Burnett, Lyman C.,	Agent, cooperative cereal investigations, Iowa agricultural experiment station, Ames, Ia.

Chadwell, Miss Blanche L.,	Clerk.
Chambliss, Charles E.,	Agronomist in Charge of Rice Investigations.
Champlin, Manley,	Collaborator, cooperative cereal investigations, South Dakota agricultural experiment station, Brookings, S. Dak.
Childs, Ross R.,	Scientific Assistant, cooperative cereal investigations, Georgia State College of Agriculture, Athens, Ga.
Christensen, Arnold M.,	Agent, cooperative cereal disease investigations, North Dakota agricultural experiment station, Fargo, N. Dak.
Clark, Charles H.,	Assistant Agronomist in Charge of Flax Investigations.
Clark, J. Allen,	Scientific Assistant, western wheat investigations.
Craig, William T.,	Agent, cooperative cereal investigations, Cornell University agricultural experiment station, Ithaca, N. Y.
Cutting, Miss Julia M.,	Clerk.
Dietz, Austin B.,	Messenger.
Donaldson, Noble C.,	Scientific Assistant, cooperative cereal investigations, Judith Basin Substation, Moccasin, Mont.
Ellison, Arthur D.,	Scientific Assistant, cooperative cereal investigations, Arlington Farm, Rosslyn, Va.

Florell, Victor H.,	Scientific Assistant, cooperative cereal investigations, Cheyenne Experiment Farm, Archer, Wyo.
Freeman, Edward M.,	Collaborator, cooperative cereal disease investigations, Minnesota agricultural experiment station, University Farm, St. Paul, Minn.
Godfrey, George H.,	Scientific Assistant, cereal disease investigations.
Hall, John H., jr.,	Agent, cooperative cereal investigations, North Carolina agricultural experiment station, West Raleigh, N. C.
Harlan, Harry V.,	Agronomist in Charge of Barley Investigations.
Hudson, Miss Agnes T.,	Clerk.
Humphrey, Harry B.,	Pathologist in Charge of Cereal Disease Investigations.
Hungerford, Charles W.,	Scientific Assistant, cereal disease investigations.
Jardine, William M.,	Collaborator, cooperative cereal investigations, Kansas agricultural experiment station, Manhattan, Kans.
Jenkins, J. Mitchell,	Assistant Agronomist, rice investigations, Crowley, La.
Johnson, Aaron G.,	Agent, cereal disease investigations, Wisconsin agricultural experiment station, Madison, Wis.
Jones, Jenkin W.,	Scientific Assistant, cooperative cereal investigations, Nephi Substation, Nephi, Utah.

Kiene, Frederic A.,	Assistant Agronomist, cooperative cereal investigations, Fort Hays Experiment Station, Hays, Kans.
Kinney, Mrs. Anna H. B.,	Clerk.
Leach, Julian G.,	Collaborator, cooperative cereal investigations, Tennessee agricultural experiment station, Knoxville, Tenn.
Leighty, Clyde E.,	Agronomist in Charge of Eastern Wheat Investigations.
McCall, Max A.,	Agent, cooperative cereal investigations, Adams Branch Experiment Station, Lind, Wash.
McMurdo, George A.,	Scientific Assistant, cooperative cereal investigations, Akron Experiment Farm, Akron, Colo.
Martin, John H.,	Scientific Assistant, cooperative cereal investigations, Bellefourche Experiment Farm, Newell, S. Dak.
Melchers, Leo E.,	Collaborator, cooperative cereal disease investigations, Kansas agricultural experiment station, Manhattan, Kans.
Moore, Miss Marjorie E.,	Clerk.
Morrison, Joseph D.,	Scientific Assistant, cooperative cereal investigations, Highmore Substation, Highmore, S. Dak.
Parker, John H.,	Scientific Assistant, cereal disease investigations.

Peacock, Miss Eva M.,	Clerk.
Piemeisel, Frank J.,	Agent, cooperative cereal disease investigations, Minnesota agricultural experiment station, University Farm, St. Paul, Minn.
Potter, Alden A.,	Assistant Pathologist.
Reddy, Charles S.,	Scientific Assistant, cooperative cereal disease investigations, North Dakota agricultural experiment station, Fargo, N. Dak.
Robertson, Miss Carrie E.,	Clerk.
Ross, John F.,	Farm Superintendent, Amarillo Cereal Field Station, Amarillo, Texas. (cooperative)
Rothgeb, Benton E.,	Scientific Assistant, Acting in Charge of Grain-Sorghum and Broomcorn Investigations.
Schmitz, Nickolas,	Collaborator, cooperative cereal investigations, Maryland agricultural experiment station, College Park, Md.
Schneiderhan, Felix J.,	Scientific Assistant, western wheat investigations, Eastern Oregon Dry-Farming Substation, Moro, Oreg.
Shryock, Charles M.,	Messenger.
Sieglinger, John B.,	Assistant Agriculturist, cooperative grain-sorghum and broomcorn investigations, Woodward Field Station, Woodward, Okla.
Smith, Ralph W.,	Scientific Assistant, cooperative cereal investigations, Dickinson Substation, Dickinson, N. Dak.

Stakman, Elvin C.,	Collaborator, cooperative cereal disease investigations, Minnesota agricultural experiment station, University Farm, St. Paul, Minn.
Stanton, T. Ray,	Scientific Assistant, oat investigations.
Stephens, David E.,	Superintendent, Eastern Oregon Dry-Farming Substation, Moro, Oreg. (cooperative)
Stoa, Theodore E.,	Scientific Assistant, cooperative flax investigations, North Dakota agricultural experiment station, Fargo, N. Dak.
Sumner, Harlan R.,	Agent, cooperative eastern wheat investigations, Missouri agricultural experiment station, Columbia, Mo.
Taylor, Miss Jane B.,	Clerk.
Tisdale, Wendell H.,	Scientific Assistant, cereal disease investigations.
Townsend, Karl H.,	Clerk.
Venable, Miss Louise M.,	Clerk.
Warburton, Clyde W.,	Agronomist in Charge of Oat Investigations.
Woolman, Horace M.,	Agent, cooperative cereal disease investigations, Washington agricultural experiment station, Pullman, Wash.

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OFFICE OF CEREAL INVESTIGATIONS

BUREAU OF PLANT INDUSTRY.

U. S. DEPARTMENT OF AGRICULTURE.

VOLUME 9.

JAN 19

1917.

January 19, 1917.

OFFICE NOTES.

Mr. Ross R. Childs left Washington on January 6 to resume his work in cereal investigations at Athens, Ga., in cooperation with the Georgia State College of Agriculture.

First page proof of Department Bulletin No. 498, "Experiments with Spring Cereals at the Eastern Oregon Dry Farming Substation, Moro, Oregon," by David E. Stephens, was read during the week of January 8.

Second page proof of Farmers' Bulletin 785, "Seed-Flax Production," by Charles H. Clark, was read on January 13.

Mr. Warburton left on January 15 for Athens, Ga., where he discussed small-grain production and the improvement of small grains by selection before the Georgia Breeders' Association. He returned to Washington on the 18th instant.

Dr. A. G. Johnson left on January 20 to resume his work in cooperative cereal disease investigations at Madison, Wis.

FIELD NOTES.

SOUTH DAKOTA:

Highmore Substation. Jan. 8. The weather during the month of December was unusually severe. There were 19 days with minimum temperatures of zero and below and only one day with a minimum above the freezing point. The maximum temperature was zero or below on five days, while the maximum temperature was above the freezing point on only 8 days. On December 20 the thermometer registered -29 degrees. There was very little precipitation during the month until the 26th, when a severe blizzard occurred. The total precipitation for the month was 0.47 inch.

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FEB 2

1917.

February 2, 1917.

OFFICE NOTES.

Mr. Ralph W. Smith, in charge of the cooperative cereal investigations at the Dickinson (N. Dak.) Substation, arrived in Washington today to spend some time in the preparation of his annual field report and in laboratory work with grains.

Mr. J. H. Parker left for St. Paul, Minn., on February 1 to inspect the cooperative experiments in cereal rust investigations at University Farm and to do greenhouse and laboratory work in connection with these investigations. He will return to Washington about April 1.

All obsolete rubber stamps furnished for Cereal Investigations work should be returned to the Office so that such material may be examined at the Mechanical Shops to determine whether or not it can be used in the manufacture of new stamps, thus cutting down the cost of material used in rubber stamp manufacture.

FIELD NOTES.

KANSAS:

Hays Branch Experiment Station. Jan. 27. The month of January has been especially favorable for stock feeding and out door work of all kinds. Two cold waves of two days' duration each occurred this month, when the temperature fell nearly to zero each night. The lowest temperature registered was -3 degrees on January 22.

The Station is building an addition to the office, 30 by 20 feet. This will have a basement containing a large vault, heating plant, and a photographic laboratory. The ground floor will contain a ladies' rest room, an office, and a display room. A new cottage for the man in charge of the forest nursery is nearing completion.

Wheat in the vicinity of Hays is in poor condition, approximating 70 per cent of normal. The ground is very dry and the best growth does not cover the ground. Wheat sown on late plowing and volunteer wheat left to produce a crop have winterkilled to a considerable extent. There is practically no pasture and feed is very scarce.

WYOMING:

Cheyenne Experiment Farm (Archer). Jan. 25. Yields of the most important cereals were unusually low during the past year. The following tables give the production of a number of the leading varieties of the principal crops:

Variety.	C. I. No.	Grain, bushels per acre	Straw, lbs. per acre
	Winter wheat (increase areas).		
Turkey	1571	10.0	1020
Ghirka	1438	9.4	930
	Common spring wheat.		
Pioneer	4324	7.7	880
Erivan	2397	7.5	820
------	1541-1	7.2	940
Huron	4935	6.6	780
	Durum wheat.		
Marouani	1593	7.6	720
Arnautka	4064	6.9	870
Kubanka	1516	6.5	580
Kubanka	4063	6.4	800
Arnautka	1493	6.1	600

Variety.	C.I.No.	Grain, bushels per acre.	Straw, Lbs. per acre.
		Oats.	
Kherson	459	9.9	410
Sixty Day	165	9.6	240
Richland	787	9.0	340
Swedish Select	134	7.7	660
		Barley.	
White Smyrna	658	8.3	1000*
Coast	690	8.0	640
Hannchen	531	7.9	680
Blackhull	878	7.8	680
		Flax.	
Montana Common	6	5.2	710
N. Dak. No. 1340	5	5.2	710
N. Dak. No. 1214	2	4.9	750
N. Dak. No. 1329	4	4.7	650
		Corn.	
Mottled Squaw		13.2	890
N. Dak. White Flint		12.3	580
Gehu		11.2	600
Northwestern Dent		10.8	1080
		Proso Millet.	
Red Turghai	31	13.2	2180
Tambov	13	11.4	2060
Black Voronezh	16	11.1	1380
		Buckwheat.	
Mountain		17.5	1520
Tartarian		5.0	860

* mowed

MONTANA:

Judith Basin Substation (Moccasin). Jan. 29. In the Judith Basin the ground has been covered with snow for nearly three months. This is an unusual condition because the snow generally blows off as soon as it falls. Throughout the State there is an unusual quantity of snow. Reports indicate that winter wheat is in good condition.

UTAH:

Nephi Substation. Jan. 20. Mr. Jones writes from Logan that the weather has been extremely cold during the past month. Fall-sown grain is well protected, however, by a covering of 18 inches of snow.

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FEB 1 8

1917.

February 16, 1917.

OFFICE NOTES.

Mr. Carleton returned on February 1 from a trip in the states of North and South Dakota, Minnesota, and Wisconsin where he went to confer with officials of experiment stations in those States.

Mr. T. E. Stoa arrived in Washington on February 3 to spend some time in the preparation of a report on cooperative flax investigations at Fargo, N. Dak., and to confer with crop specialists of the Office regarding future work.

Mr. C. S. Reddy returned on February 8 to Fargo, N. Dak., to resume work in cooperative investigations of cereal diseases, particularly those of flax.

Mr. F. R. Babcock left on February 9 for Williston, N. Dak., to resume his work in cooperative cereal investigations at the Williston Substation.

Attention is called to Secretary's Memorandum No. 184, entitled "No Embargo on Shipments Consigned to the Government in Time of Peace:"

The attention of contractors and the administrative officials of the department is directed to the provision in the Act approved August 29, 1916 (39 Stat. 604), amending section six of an Act entitled "An Act to regulate commerce" so as to read as follows:

> That in time of war or threatened war preference and precedence shall, upon demand of the President of the United States, be given over all other traffic for the transportation of troops and material of war, and carriers shall adopt every means within their control to facilitate and expedite the military traffic. And in time of peace shipments consigned to agents of the United States for its use shall be delivered by the carriers as promptly as possible and without regard to any embargo that may have been declared, and no such embargo shall apply to shipments so consigned.

In case of the refusal of any transportation company, or of any common carrier, or of any agent of either, to accept and forward any shipment for the use of the United States, consigned to any employee of this Department or to any bureau, service, or division thereof, on account of any embargo established by a transportation company or common carrier, or in case of failure to forward any such shipment promptly, information concerning such refusal or failure should forthwith be forwarded to the chief of the bureau, service or division to which the shipment is consigned, giving the nature of the shipment, the name of the company, carrier, and agent of either declining to accept, or failing to accept and forward the shipment, the station at which the consignment was offered, as well as the initials and number of the car in case the material has been accepted for shipment but forwarding thereof is delayed.

On receipt of such information the chief of the bureau, service, or division shall use such means as may be within his power to facilitate the acceptance of the shipment, or its forwarding, if the same has already been accepted, and as soon as practicable, forward all information concerning the same to the Secretary in order that appropriate action may be taken.

D. F. Houston,
Secretary.

FIELD NOTES.

GEORGIA:

State College of Agriculture (Athens). Feb. 7. All winter grain has been severely damaged by the cold weather since February 1. Late-sown oats appear to be completely killed, while early-sown oats and barley are injured about 75 per cent. Most of the wheats appear to be only slightly injured.

The lowest temperature recorded was 4 degrees on the morning of February 3.

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MAY - 2

1917.

March 2, 1917.

OFFICE NOTES.

Mr. F. J. Piemeisel, of the University of Minnesota, was appointed on February 1 as Scientific Assistant in Plant Pathology to assume joint leadership of the proposed south-to-north grain-rust survey. The object of this survey, which will cover 13 States, is to collect further information concerning the epidemiology of the stem rust and to gather further facts regarding the distribution of the barberry and its possible relation to the occurrence of rust epidemics. The survey will begin about March 5 and will continue until about August 1.

Dr. Charles Drechsler, of Harvard University, and Dr. Chas. Gregory, of Cornell University, have been appointed as field men to assist in this survey. A fourth man will be appointed in the near future.

Prof. J. R. Fain, of the Georgia State College of Agriculture, visited the Office on February 17.

Mr. Hungerford left Washington on Feb. 25 for Corvallis, Oreg., to resume work in cereal-disease investigations in cooperation with the Oregon Agricultural Experiment Station. He stopped en route at Madison, Wis., to confer with pathologists of the Wisconsin Agricultural Experiment Station.

Prof. George Roberts, agronomist and acting dean of the College of Agriculture, University of Kentucky, was a visitor at the Office during the week of February 26.

Mr. Carleton left Washington on February 28 to consult regarding and to inspect the cooperative cereal work at Ithaca, N. Y., and to consult plant pathologists in New York and Boston concerning cereal diseases. He will return on March 6.

Dr. Leighty returned on March 1 from a two-weeks' trip in the North Central States, during which time he attended the hearings on the proposed grain standards for wheat which were held at Fargo, N. Dak., Minneapolis, Minn., Chicago, Ill., Kansas City, Mo., and Indianapolis, Ind. Dr. Leighty reports that at these meetings there was a large attendance of grain men, millers, and others interested in the wheat industry. Many important suggestions were made, which doubtless will be of value in fixing the grades finally adopted.

Department Bulletin No. 498, "Experiments with Spring Cereals at the Eastern Oregon Dry-Farming Substation, Moro, Oregon," by David E. Stephens, was issued on Feb. 19.

Farmers' Bulletins 785 and 786, entitled respectively "Seed-Flax Production," by Chas. H. Clark, and "Fall-Sown Grains in Maryland and Virginia," by T. R. Stanton, were delivered by the Government Printing Office on Feb. 26.

Galley proof of Farmers' Bulletin 800, "Grains for Central Oregon Dry Lands," by L. R. Breithaupt, was read on Feb. 28.

Mr. Babcock is spending three or four weeks at Fargo, N. Dak., assisting in the milling of wheat varieties in the uniform varietal experiments. The milling is conducted cooperatively by the North Dakota experiment station, the Office of Grain Standardization, and the Office of Cereal Investigations.

FIELD NOTES.

KANSAS:

Fort Hays Experiment Station (Hays). Feb. 24. Moderate temperatures have prevailed throughout February and improvement work at the Station has progressed rapidly. All buildings are being painted, the paint having been applied to the roofs with a spraying machine. The new cottage is nearly completed and the addition to the office is being built.

No rain or snow has fallen and wheat has been injured by drought. There has been considerable winterkilling during the month, due more to drought and poor root development than to severe temperatures.

Superintendent Weeks returned to the Station on Feb. 20 from a 3-weeks' vacation in Nebraska. He represented the Station during the latter part of this week at a livestock school held by the extension department of the College of Agriculture, at Scott City, Kans.

OREGON:

Eastern Oregon Dry-Farming Substation (Moro). Feb. 19. The winter in the Columbia Basin has been mild. The lowest temperature recorded at Moro was 2 degrees on Dec. 30. The precipitation has been considerably less than normal during the winter months. The total precipitation since September 1 to date has been only 4.73 inches. The ground was bare during most of the winter.

Shortly after the winter grains had been sown, the weather turned cold and the ground remained frozen, with no snow covering, for nearly 2 months. Winter wheat sown the last week in October is just beginning to emerge. Winter barley which was sown in dry ground on October 27 has not emerged and undoubtedly will have to be reseeded. Indications are that there will be good stands of all winter wheat, except in the classification nursery where there are many rows in which no plants have emerged.

During February the temperature has been above normal and field work has been in progress for ten days. On the Sub-station considerable plowing has been done and some field peas have been sown. In the northern end of the county considerable spring wheat has already been sown.

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VOLUME 9.

MAR 16

1917.

March 16, 1917.

OFFICE NOTES.

Mr. H. D. Barker, of Wisconsin, was appointed on March 5 as Field Assistant in Black and Stripe Rust, he being the fourth appointee in the grain-rust survey conducted under the joint leadership of Dr. Humphrey and Mr. Piemeisel.

Mr. Jenkins left Washington on March 10 to resume his work with rice investigations at the Crowley Rice Experiment Farm, Crowley, La.

Mr. Schneiderhan returned on March 14 to Moro, Oregon, to continue his work in plant-breeding investigations at the Eastern Oregon Dry-Farming Substation.

Mr. Martin left Washington on March 15 to return to Newell, S. Dak., to continue his field work in cereal investigations at the Belle Fourche Experiment Farm.

In view of the fact that the Office of Cereal Investigations two years ago adopted a new scale for recording rust percentages it is recommended that the use of the old rust scale be discontinued in favor of the one more recently adopted. This change is strongly urged for the reason that it will insure greater uniformity in the taking of cereal notes and will more accurately represent the actual rust percentages. The new scale is printed in the agronomic, field, and cereal disease notebooks.

FIELD NOTES.

VIRGINIA:

Arlington Farm. March 15. Cereal crops are not so far advanced as usual. Winter wheat is in good condition, except for slight injury from winterkilling. Winter barley is not in as good condition as usual, having been seriously injured during the winter. Winter oats are in poor condition. A large percentage of the plants have been heaved out of the ground and the crop generally winterkilled badly. Winter rye varieties, as usual, are in good condition.

The soil is at present too wet to permit field operations.

Maximum temperature for the two weeks ending March 14, 57 degrees (March 8); minimum, 24 degrees (March 6); precipitation, 3.34 inches. The weather generally has been cold and stormy.

Maximum temperature since January 1, 66 degrees (Feb. 26); minimum, zero (Feb. 13); precipitation for January, 2.79 inches; for February, 2.06 inches.

GEORGIA:

State College of Agriculture (Athens). March 1. Practically all of the oats on the experiment plats have been winterkilled. In the varietal tests there is only a very thin stand, particularly of Culberson, Bicknell, and the Culberson selections, while only occasional plants of Red Rustproof and Fulghum are alive.

On a recent trip through Clarke and Oconee counties it was observed that only three fields out of fifteen had as much as a 50 per cent stand.

Reports from the southern part of the State indicate a somewhat higher percentage of survival in that section.

OREGON:

Eastern Oregon Dry-Farming Substation (Moro). Feb.26. After nearly three weeks of spring weather, temperatures of about 15 degrees have been recorded the last few nights and snow to the depth of about 6 inches has fallen.

A carload of Early Baart wheat has been sold here by the Wasco Warehouse and Milling Co. for seed. A carload of Marquis wheat also was sold at Wasco for seed. An inquiry has been made as to the best variety of wheat to sow in a field of Turkey wheat partially winterkilled or in which there is a very thin stand. Much reseeding may be necessary in Sherman County this spring and Marquis is being recommended. The representatives of the Wasco Warehouse and Milling Co. state that there will be no dockage for mixtures of good Turkey and Marquis because the milling qualities of the two wheats are about the same.

March 8. The weather has moderated again and the snow has melted.

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Apr. 3, 1917
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THE CEREAL REVIEW

OFFICE OF CEREAL INVESTIGATIONS

BUREAU OF PLANT INDUSTRY.

U. S. DEPARTMENT OF AGRICULTURE.

VOLUME 9.

MAR 30

1917.

March 30, 1917.

OFFICE NOTES.

Mr. Theodore Stoa left Washington on March 17 for Agricultural College, N. Dak., to resume his work in cooperative flax investigations.

Mr. Ralph W. Smith returned to Dickinson, N. Dak., on March 23 to resume cooperative cereal investigations at the Dickinson Substation.

Dr. Humphrey returned on March 26 from a trip to points in Indiana, Iowa, Kansas, Minnesota, and Wisconsin, in the interests of cereal disease investigations.

Mr. Chambliss left Washington on March 29 to visit points in Louisiana, Texas, Georgia, and South Carolina in the interests of rice production.

First page proof of Farmers' Bulletin 800, "Grains for Central Oregon Dry Lands," by L. R. Breithaupt, was read on March 24.

A manuscript entitled "The Identification of Varieties of Barley," by Harry V. Harlan, was transmitted to the Chief of the Bureau on March 23, with request that it be published as a professional paper in the Department Bulletin series.

The word "field" in the ninth line of page 23 of the "Cereal Review" of March 16, is an error, as the scale for recording rust percentages does not appear in the field notebooks used generally in the Bureau of Plant Industry, but only in the agronomic notebook and the cereal disease notebook used particularly by the Office of Cereal Investigations.

FIELD NOTES.

VIRGINIA:

Arlington Farm. March 29. During the past two weeks the weather has been cool, windy, and stormy. Maximum temperature, 67 degrees (March 26); minimum, 25 degrees (March 19); precipitation for the month to date, 6.24 inches.

Cereal crops are beginning to make a satisfactory spring growth. Because of winterkilling winter oats and barley are not so far advanced as usual, while winter wheat and rye are in good condition.

KANSAS:

Fort Hays Experiment Station (Hays). March 17. There has been no rain for several weeks, and throughout the county winter wheat has been badly damaged by high winds. Many fields will be reseeded with spring crops.

OREGON:

Harney County Dry-Farming Substation (Burns). March 15. The winter has been unusually long and cold. The lowest temperature in January was -32 degrees, in February, -23 degrees, and in March to date, -16 degrees. The snow is still about a foot deep and the indications are that it will not melt before the first part of April. Only 2.94 inches of precipitation have been recorded since September 30, which is less than half the average for the period. The ground is still dusty beneath the snow where crops were grown last year. Such conditions following three successive dry years are not favorable to crop production.

Winter cereals seeded the first of October have not yet germinated. A stand may be obtained from April emergence, but with such a late start the prospects for a crop are not favorable.

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VOLUME 9.

APR -6

1917.

April 6, 1917.

OFFICE NOTES.

Beginning with this number the Cereal Review will appear weekly until further notice.

Milling and Baking the Wheats from the Uniform Varietal Experiment.

A total of 117 samples of wheat was obtained from the uniform varietal experiment in the Great Plains area in 1916. These have been milled and baked at Fargo, N. Dak., in cooperation with the State experiment station and the Office of Grain Standardization. Mr. Babcock, who has been helping with this work, reports that the mill runs 4 days each week and 7 samples are milled each day, or a total of 28 each week. The milling operations, therefore, have occupied a full month. About 9 samples are baked each day, so that more than 2 weeks are required for the baking experiments.

This completes the second year of the experiment. A similar series has been included in the experiments west of the Rocky Mountains, beginning in the spring of 1917.

FIELD NOTES.

SOUTH DAKOTA:

Highmore Substation. April 3. The winter of 1916-17 has been the most severe in the 48 years during which weather data have been recorded at Highmore and Fort Sully.

In December the minimum temperature was below zero on 19 days and was above the freezing point on only 2 days. The maximum temperature was above freezing on only 8 days and on 5 days it was below zero. A heavy snow which drifted badly fell on December 26.

In January the minimum temperature was zero or below on 16 days and was not above 32 degrees on any day. The maximum was above the freezing point on only 7 days and was below zero on 4 days. Severe blizzards occurred on January 20-22 and 29-30 with a total precipitation of 1.05 inches. The drifted snow and severe cold made outside work difficult and caused heavy losses of livestock.

During February the minimum temperature was below zero on 19 days and no minima above freezing point were recorded. The maximum was above freezing on only 4 days and on 3 days was below zero. A severe blizzard on Feb. 4-5 was followed by numerous wind storms and snow flurries during the remainder of the month.

In March there was a total of 1.27 inches of precipitation, all in the form of snow. The snow began to melt with the coming of milder weather about the middle of March and by the end of the month most of it had melted except where the drifts were large or were protected from the sun and wind. The total snowfall during the winter was 33.4 inches, most of which melted during the last half of March. The melting was gradual so that a very large part of the moisture was absorbed by the soil. The roads, however, were impassable and no field work could be done.

Fall-plowed fields and fallow and potato ground will be dry enough for seeding in two or three days. It will not be possible to do any work on corn or stubble land before April 12 or 14. All fields are now well saturated with moisture so that good crops should be produced if the growing season is normal.

Winter rye has survived the winter practically without injury and spring growth is beginning. Winter wheat has not yet revived sufficiently to determine the survival but apparently a large part of the plants are alive.

NORTH DAKOTA:

Agricultural Experiment Station (Fargo). April 2. The weather has been very favorable during the past two weeks. Snow remains only in sheltered places and where large drifts had formed. The fields are drying and from present indications spring work will start early and under favorable conditions.

CALIFORNIA:

Plant Introduction Garden (Chico). March 27. The wheat classification nursery looks very good. Good stands were obtained in most of the rows but growth has been light because of the cold winter.

OREGON:

Harney County Dry-Farming Substation (Burns). March 20. There is still about a foot of snow and temperatures frequently have been well below zero this month. Spring will be very late and conditions are not promising for dry farming because of light winter precipitation.

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1917.

April 13, 1917.

FIELD NOTES.

KANSAS:

Ft. Hays Experiment Station (Hays). April 7. The weather continues dry. The last two weeks of March have been very windy and reports from all parts of the State indicate that there has been much damage from soil blowing. Much of the winter wheat has been killed by the prolonged drought. It is reported that in some fields it is completely destroyed, while in nearly all at least half of the plants are dead. There has been no spring growth and the wheat is very poorly rooted.

The Fourth Annual "Roundup" for stockmen and farmers was held at the Station on Thursday, April 5, with an attendance of about 1,000. During the forenoon the live-stock experiments and the fields were inspected and in the afternoon an interesting program of addresses was given. At noon a cafeteria luncheon was served by the Station to all visitors.

WYOMING:

Cheyenne Experiment Farm (Archer). April 3. The winter has been unusually cold and windy. Precipitation has been light and the snows that have fallen have drifted. Winter wheat on fallow or summer-plowed land has been injured by soil blowing. A large proportion of the wheat is still alive, however, and with favorable weather conditions a fair stand may survive. Winter wheat in wheat and oat stubble looks good, although the stand appears thin.

Because of the cold, unfavorable season, soil preparation for spring crops has not been begun on the farm.

Practically all snow drifts have been gone for several days. A light snow has been falling all day.

No spring seeding and only very little seed-bed preparation has been done in the vicinity. Frost, which penetrated the soil to a depth of from 2 to 3 feet during the winter, still interferes with tillage operations.

SOUTH DAKOTA:

Bellefourche Experiment Farm (Newell). April 3. The snowfall in the State was heavier than usual and the spring is somewhat later than normal. Spring work has scarcely begun in the Bellefourche district, and no spring seeding has been done. The grasses, alfalfa, and winter grains have not yet started growth. Winter wheat is in rather poor condition in this vicinity. On the station farm winter wheat has been damaged somewhat by soil blowing.

Agricultural Experiment Station (Brookings). April 4. Spring is rather backward and parts of the largest snowdrifts still remain. No seeding has been done yet. The heavy snowfall melted gradually and most of the water was absorbed, as the ground was dry last fall. It was expected that spring work would be begun today on all the stations east of the Missouri River, but rain is now falling at Brookings, which will delay the work somewhat. Prospects at present are favorable, although seeding will be slightly later than usual.

Winter wheat at Brookings on the plats in corn stubble has apparently come through the winter with a fair stand. On fall plowing, a third of the stand may survive.

NORTH DAKOTA:

Dickinson Substation (April 3). Mr. Smith returned to the Substation on March 31.

The snowfall during the winter was above normal, but the soil has dried rapidly, as the moisture content was low last fall and the precipitation during March was only 0.48 inch. The ground thaws every day but freezes at night. No field work was in progress between Fargo and Dickinson, but in the vicinity of Dickinson and east to the Red River Valley it is likely to begin the latter part of this week. In the Red River Valley and generally in Minnesota the soil is too wet for field work to begin until about April 16. If the present mild weather continues spring work will begin as early as usual in this section and generally in North Dakota outside the Red River Valley.

Williston Substation (April 6). Mr. Babcock returned to the Substation on April 5.

Snow has fallen most of the day and the ground is now well covered, with considerable drifting. Previous to this snow storm, weather conditions were excellent and fields in many places were ready to work. The first work on the Substation farm was done yesterday, when disking was begun. Outside the Williston Valley spring is later and farm work could not have been begun before the week beginning April 9 if good weather had continued. Spring conditions are normal and are generally ten days ahead of last year.

The low lands along the Missouri River are flooded considerably and the river is higher than it has been for at least three years.

MONTANA:

Judith Basin Substation (Moccasin). April 4. Spring is very late in the Judith Basin and generally in Montana. Some snow and ice still remain, and the frost is not all out. No spring work has yet been done, and it is doubtful if spring seeding can be begun in less than two weeks, even though weather conditions are good.

IDAHO:

Aberdeen Substation (April 4). Precipitation during January, February, and March was slightly above the average for those months in the 5-year period during which records have been taken at Aberdeen. The snow has drifted more than usual and train service has frequently been delayed. The winter was the coldest ever recorded in Idaho, the temperature being -10 degrees or lower for one period of eight days. On six of these days the minimum was at least -21 degrees F., and on January 13 it was -29 degrees.

The spring is unusually late. Half the Substation farm is still covered with snow, whereas most of the spring seeding was done at this time last year. If weather conditions remain as at present it will not be possible to plow for at least two weeks.

Conditions in the vicinity of the Substation, particularly on the dry lands to the west, are even more backward than on the Substation farm. The snow on these lands has drifted badly and some of these drifts are still 2 to 3 feet deep. Much of the land, however, is practically bare. Winter wheat has been exposed to the extreme cold and much winterkilling is likely to result. Farmers are preparing to resow this land, if necessary, though seed is very scarce and high in price.

Wheat is now $2.90 per cwt. at Aberdeen, and barley and oats $2.80. Alfalfa hay has sold as high as $40 per ton. There has been much suffering among livestock of all kinds and in some sections many of the animals have died for lack of feed. The State Director of Markets is now in Utah trying to buy hay for Idaho farmers. The farmers generally are planning to increase their acreages of wheat, barley, and potatoes, and the acreage in food crops in Idaho is likely to be larger than ever before. More than 1,000 acres of garden peas will be sown for seed in the Aberdeen district, and there will be an increase in the acreage of alfalfa and clover for seed.

UTAH:

Nephi Substation. April 3. The weather is cold and unsettled. Practically all the snow has melted, but very little farm work has been done in this section. Many farmers are cultivating their alfalfa for the purpose of destroying weeds and alfalfa weevils.

The dry-farm land is badly crusted and unless rain falls soon to break and soften this crust stands of late-sown fall wheat probably will be very thin. In some cases reseeding may be necessary, but it is too early to determine this.

Precipitation for January, 0.24 inch (normal, 1.20); February, 0.90 inch (normal, 1.29); March, 0.33 inch (normal, 1.63). This makes a shortage of 2.65 inches for the three months.

OREGON:

Eastern Oregon Dry-Farming Substation (Moro). April 3. The weather during the fall and winter was unfavorable for winter grains generally in the Columbia Basin of Oregon. The precipitation for the seven months from September to March, inclusive, was nearly 2 inches less than the 10-year average. The spring has been cold and dry and the sowing of spring grains is a little later than usual. Part of the land on which winter wheat failed to emerge, because of the dry weather last fall, is being resown to spring grains. Crops on land fallowed in 1916 are expected to be good, because of the abundant rainfall of last summer. Yields are likely to be poor on land on which grain was grown last year. On account of the high price of all grains less land than usual will be fallowed in the Columbia Basin.

Harney County Dry-Farming Substation (Burns). April 6. The spring has been very cold and late in this vicinity. The snow is not all off yet and the land will not be in shape to work for several days. The seeding will be later than usual. The precipitation during the winter was only about half that of the 10-year average. As the preceding three years have been dry and there was little moisture in the summer fallow last fall the crop prospects are not good.

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April 20, 1917.

OFFICE NOTES.

EMERGENCY APPROPRIATION FOR AGRICULTURE RECOMMENDED.

The Secretary of Agriculture in a report presented to Congress on April 20 asks for a special appropriation of $25,000,000 for emergency work in preventing a food shortage. The following is a brief summary of his recommendations.

Organization.

Coordinate all national and State agencies and independent farmers' organizations and have all work along uniform lines.

Create a small advisory commission of experts to aid the Department in detail work.

Each State to create State councils to study and deal with problems of food production and conservation.

Production.

Oppose commercial production anywhere with new and untried crops and concentrate on crops already well known and successfully grown.

Increase efficiency of present farm workers and provide for additional farm labor so far as necessary and practicable.

Have rural high schools suspend operations earlier this spring and begin later next fall to permit boys and girls alike to aid in the harvest work.

Have industrial plants do their repair work during the harvest season so that employees laid off while machines are being overhauled can work in the fields.

Enlarge all field forces of experts so that farmers can get the benefit of expert instruction along all lines of production of grains and livestock.

Enlist all housewives in a nation-wide campaign to eliminate waste.

Enlarge to greatest possible extent all branches of the Department which are combating destructive insects and diseases of both animals and plants.

If necessary and desirable, increase the flour supply 18,000,000 barrels by milling wheat so as to make 81 per cent of the kernel into flour instead of 73 per cent as at present.

Safeguard seed stocks for 1918 against untoward climatic or other conditions.

Distribution.

Make an immediate nation-wide survey of the food supply of the nation and establish market grades and classes of all farm products.

Give preference to shipments of seeds, fertilizers, insecticides, fungicides and farm machines and materials required in their manufacture.

Enlarge the Department market news service to cover all localities so that both undue shortages or temporary oversupplies of perishable goods would be impossible.

Have additional assistant secretaries of agriculture named to carry out the work of the Department along the suggested new lines.

All field men and all office men who are traveling are requested to report as fully as possible each week on crop conditions in their respective localities. Special effort should be made by all the men this year to get accurate information regarding crop conditions and the progress of field work. The facts gathered should be reported regularly. Do your bit!

Mr. J. H. Parker arrived in Washington from St. Paul on April 14 to confer with members of the Office concerning cereal disease work for the summer and to plan a trip through the southern States in the interests of cereal rust investigations.

Mr. J. C. Brinsmade, Jr. left on April 19 for Mandan, N. Dak., where he will resume flax investigations at the Northern Great Plains Field Station.

MEMORANDUM TO HEADS OF OFFICES.

Gentlemen:

It has been noted that a number of the offices of this Bureau have been submitting lists of property, stating that the articles have become worn out and are unserviceable and requesting permission to drop them from their inventories without stating what disposition is made of the remaining parts. Attention is invited to the following extracts from Sections 9 and 11 of the Property Regulations, effective July 1st, 1916:

PARAGRAPH 9.

"Articles for which the Department has no further use and articles which have become unserviceable will be submitted to a board of survey for sale or other disposition. In Washington such articles will be submitted to the department board of survey. For action concerning such articles outside of Washington special boards of survey will be appointed upon recommendation of the chief of bureau. Recommendations for the appointment of special boards of survey shall be supported by descriptions of the articles to be disposed of, together with statements of the specific reasons therefor."

PARAGRAPH 11.

"An employee, responsible for property which has become totally unserviceable or worthless at a place where it would be impracticable for a board of survey to pass upon it, must refer the facts to the chief of bureau, who, if he is satisfied with the report, may, with the prior approval of the Secretary, authorize and direct the destruction of the property and appropriate adjustment of the property returns."

It will be noted that all property worn out or of no further use will be submitted to Boards of Survey for sale or other disposition and that even the chief of bureau has no authority to authorize and direct the destruction of property without the prior approval of the Secretary.

It will be noted, however, in the first paragraph on page 62 of the Property Regulations that it is stated that

> "When economy of expenditure or efficiency of use will result and the necessary parts can be taken from articles on hand and no longer needed for the purpose designed, such articles on hand may be regarded as expendable under this paragraph."

Property used in repairs may be dropped from inventories by reference to this paragraph.

It is requested that the attention of all officers in immediate charge of property belonging to the Bureau be called to the requirements of the Property Regulations in regard to the disposition of property for which there is no further use or which is worn out.

Very truly yours,

James E. Jones,

Chief Clerk.

FIELD NOTES.

VIRGINIA:

Arlington Farm. April 20. The weather has been somewhat changeable during the past two weeks. Temperatures continue to rise, however, and the frequent warm rains are favorable to crop growth.

Winter oats in both field and nursery plats have been sprayed with a solution of sodium arsenite to kill weeds. Winter wheat, barley, and rye are in good condition and are making splendid growth, while winter oats, which were severely injured during the winter, are improving.

A tenth-acre plat was sown to Marquis spring wheat on April 18. In the cereal nurseries, weeding is in progress.

GEORGIA:

State College of Agriculture (Athens). April 18. Most of the wheat varieties are in excellent condition; a few of the earlier varieties are beginning to head. Rye is almost fully headed. Only a few plants are left in the plats of oats and barley.

At the Tifton Substation wheat, oats, and rye are in fair condition. The earlier varieties of all are fully headed. There is considerable rust in both wheat and oats.

At the Quitman Substation grain is not making favorable growth. Most varieties of wheat, oats, and rye are badly rusted. A good stand of oats survived the winter but growth is poor.

OKLAHOMA:

Woodward Field Station. April 17. The first seeding in the date-of-seeding experiment was done on April 16. The following varieties were sown: Acme broomcorn (C. I. No. 243); Dwarf milo (C. I. No. 332); Early kafir (C. I. No. 472); Sumac sorgo (S. P. I. No. 1712); and Red Amber sorgo (S. P. I. No. 174). These seedings were in duplicate on different fields.

Precipitation amounting to 0.44 inch, on April 11 and 15, was of much benefit.

SOUTH DAKOTA:

Bellefourche Experiment Farm (Newell). April 16. Winter wheat is recovering very slowly and the indications are that much of it is killed. At present the snow is about 3 inches deep. Some field work was done during the past week but practically no seed has been sown. The plats have been staked and as soon as the weather permits seeding will be done.

Maximum temperature, 70 degrees; minimum, 25 degrees; precipitation, 0.80 inch.

NORTH DAKOTA:

Agricultural Experiment Station (Fargo). April 16. Field work was begun on April 4. The ground is in splendid condition and seeding is progressing favorably. There have been no spring rains. The temperature remains quite low, retarding the growth of grass and the germination of grain.

Dickinson Substation. April 14. Kubanka wheat (C. I. No. 4063) was sown on the rotation plats on April 12. It was planned to sow wheat and oats in the varietal plats on April 13, but a snowfall of about 4 inches prevented further work during that week.

Winter rye sown on fallow is in excellent condition and winter wheat has been much less injured than usual by winterkilling. The winter wheat nursery sown on fallow seems to be in fairly good condition, though in the previous two winters it was totally winterkilled.

The precipitation of about half an inch resulting from the snowfall on April 13 will insure good germination of all crops.

Farm work became general in the vicinity of the Substation early in the week but is delayed somewhat by the freezing of the ground at night.

Williston Substation. April 14. The first seeding in the date-of-seeding experiment was made today. Wheat, oats, barley, and flax were sown.

Some seeding has already been done by farmers in the vicinity. There is a great demand for wheat and flax and both are difficult to obtain, although farmers in this part of the State will probably have a sufficient supply. The unusual demand for durum wheat may not be fully met. Considerable Marquis will be seeded because of the large supply and because it is of better quality than the other common wheats harvested last year. Power Fife is also in great demand and farmers who have this variety can easily dispose of it for seed. Very little Bluestem will be sown because seed is scarce and also because of its lack of rust resistance last year.

Maximum temperature, 60 degrees; minimum, 20 degrees; precipitation, 0.09 inch.

IDAHO:

Aberdeen Substation. April 16 and 17. The dry-farm portion of the Substation will have to be reseeded, as the stand was reduced to about 15 per cent by winterkilling. Seed grain is very scarce. Another snow storm occurred on the 17th.

UTAH:

Nephi Substation. April 15. The weather continues rather cold and dry. The soil on the dry farm is quite badly crusted, but the indications are that the stands of winter wheat will be fair. Before sowing spring cereals it was necessary to harrow all fallow land. Spring wheat, oats, barley, and peas were sown on April 10, 11, and 12 respectively. It was necessary to seed deeper than usual in order to reach moisture. Unless heavy storms occur and the surface soil becomes crusted the grain probably will emerge satisfactorily.

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OFFICE NOTES.

Dr. E. C. Stakman, of the Minnesota Agricultural Experiment Station, and Dr. A. G. Johnson, of the Wisconsin Agricultural Experiment Station, arrived in Washington on April 23 for conferences with members of the Office and others regarding the proposed campaign for the eradication of smut and the extension of the rust-survey project. Dr. Johnson returned to Madison, Wis., on April 24. Dr. Stakman left Washington on April 25, with Mr. John H. Parker, to visit points in the South in the interests of cereal rust investigations.

The attention of field employees is directed to the following memorandum from the Acting Chief of the Bureau of Plant Industry, dated April 17:

> The Bureau of Entomology is planning to conduct an insect census throughout the present season, and will cooperate in this work with the entomologists throughout the country. As many of the men of this Bureau notice insect depredations from time to time in various parts of the country, it is desired that such conditions be noted and reported as fully as possible to the Bureau of Entomology, through this Office. The Bureau of Entomology will tabulate the information received from all sources and as occasion demands will issue brief statements regarding the desirable methods of insect control for distribution in infested regions.
>
> Very truly yours,
>
> K. F. Kellerman,
>
> Acting Chief of Bureau.

FIELD NOTES.

KANSAS:

Fort Hays Experiment Station (Hays). April 21. More than half of the winter wheat in Ellis County is destroyed and much of the land is being reseeded to spring barley. A large acreage will be planted to corn and grain sorghums. The officials of the experiment station have been asked to assist in the work of obtaining a large acreage of row crops to take the place of the wheat that has failed. A meeting was held at Ellis on April 20, at which 34 farmers interested in grain sorghums were in attendance. A grain-sorghum rally will be held at the station on Apr. 28.

Two recent showers totaling 0.96 inch were of some benefit to the winter wheat.

WYOMING:

Cheyenne Experiment Farm (Archer). April 21. Winter wheat has made but little growth because of the cold weather. That seeded on fallow looks poor, while that seeded in stubble is fairly vigorous. All winter wheats in the nursery were winterkilled, including all seeded in furrows. The furrows had been leveled by drifting soil.

Rye seeded on double-disked pea and oat stubble survived the winter with a good stand. It is making fair growth and is beginning to show green. The Johannis rye obtained from the Arlington Farm last fall winterkilled.

Double disking for spring cereals was begun on April 9. The moisture conditions in the surface foot of soil are optimum for the seeding of spring crops; the soil is too cold for germination, however. The first seeding of spring grains in the date-of-seeding experiment was made April 16.

Farm work in the vicinity of Archer is backward because of the cold season. Very little plowing and seeding have been done. A snowfall of from 3 to 5 inches occurred on April 18 and 19.

SOUTH DAKOTA:

Bellefourche Experiment Farm (Newell). April 23. Field work was possible only on the last two days of the week because of the wet ground. Seed for all of the plats was treated. Seeding of spring wheat and oats in the varietal experiments and in the rate-of-seeding experiment was finished. All spring work is very much delayed. Winter grain and perennial crops are making very poor growth. Maximum temperature for the past week, 73 degrees; minimum, 25 degrees; precipitation, 0.24 inch.

Highmore Substation. April 21. Thus far during April the weather has been unfavorable for field work. From April 5 to 11 some seeding was done on high ground that had been fall plowed or from which the corn stalks had been removed. Since then it has snowed or rained almost constantly. The temperatures have been so low that very little evaporation has taken place until yesterday and today. Seeding is being done again today on the higher ground and by next week most of the fields should be dry enough if present temperatures continue.

Very little seeding has been done throughout the State; much grain will be sown with very little previous preparation of the soil. The work will be done rapidly as soon as the fields are dry enough. Winter wheat is entirely killed with the exception of that sown in stubble or protected by a mulch of straw or manure. The past winter has been so severe that the unprotected plants could not withstand the continued low temperatures. Precipitation for the month to date, 1.76 inches.

NORTH DAKOTA:

Dickinson Substation. April 21. During the past week the weather has been very unfavorable for spring work. Snow or rain fell every day until Tuesday, April 19. The total precipitation amounted to only an inch, but the fields dried very slowly. Seeding of wheat in the varietal plats and for increase was finished today. Twenty-two varieties were sown in triplicated fortyeighth-acre plats and four varieties in increase plats.

Agricultural Experiment Station (Fargo). April 23. Field operations were delayed by wet weather for several days during the past week. About half of the wheat seeding has been done. The total precipitation was 0.78 inch, on four days. The lowest temperature was 22 degrees, with a mean minimum of 34.3 degrees. The highest temperature was 54 degrees, with an average maximum of 47 degrees.

Williston Substation. April 21. Field work was delayed by a snow storm that occurred on the 15th, and it was not possible to resume operations until the 19th. On April 19 and 20 all field plats of wheat, oats, and barley were sown and the seeding of the wheat nursery was begun.

All winter wheats in plats and nursery sown on ordinary level land cropped to potatoes in 1916 have been entirely winterkilled. One small plat sown partly in furrows about 4 inches deep and partly on the ridges between such furrows, shows varying survival of plants. Drill rows in the bottom or on the sides of these furrows contain a high percentage of plants, while the plants in drillrows on the ridges are mostly dead. The variety used was Buffum (C. I. No. 3330).

The nursery seedings contained a number of the hardy strains tested previously, among which was the cross between Beloglina and Buffum that was made at the Substation a few years ago and had appeared promising in the past two years as a hardy strain. None of the plants in these rows survived.

Maximum temperature for the week, 64 degrees; minimum, 23 degrees; precipitation, 0.3 inch.

Very few farmers have started farm work yet, but if present weather conditions continue they will begin early next week.

MONTANA:

Judith Basin Substation (Moccasin). April 23. While it is still too early to determine accurately the extent of the damage by winterkilling in winter wheat, indications are that the crop will again be a complete failure. It appears to be entirely winterkilled regardless of variety or of time and method of seeding. This condition also exists throughout the Judith Basin. Some of the wheat that was stubbled in seems to be in fairly good condition but is not making much growth. Ten days ago most of the winter wheat appeared to have come through the winter in fairly good condition, but it did not have sufficient vitality to start new growth and the continued cold, wet weather has killed it. Most of the farmers are planning to reseed with spring wheat, but there is a shortage of good seed. While many farmers held some seed with the expectation of seeding small acreages, they did not save enough to sow their entire area and the elevators have not much good seed for sale.

On the Substation the 40-acre increase field of Kharkov wheat will be reseeded to Marquis and probably an additional 20 acres will be sown as enough seed is available and as large an acreage as possible is desired. Because of the wet weather it has been impossible to do any spring work and fallow ground will not be dry enough to work for three or four days. This means that even with fair weather seeding can not be done before May 1.

CALIFORNIA:

Plant Introduction Garden (Chico). April 20. The wheat classification nursery has not made a heavy growth because of the cold winter and spring. This probably will make the harvest a little later than last year. The stand in the classification nursery is as good as that of last season. Several recent showers have been beneficial to all grain.

The condition of wheat and barley in this section of the State is above normal for this season of the year. Sowings made in November look better than those made at later dates.

OREGON:

Harney County Dry-Farming Substation (Burns). April 21. Field work was begun on April 19, - the latest date on which field work has been begun in any year since the Substation was started. It will be difficult to finish the spring seeding in time for best results, although the work is being rushed. The winter's precipitation was about half of the normal and was all absorbed; there was practically no evaporation. This will give the crops the best chance possible considering the small amount of total moisture.

Winter wheat and rye sown last fall in the dusty fallow have not yet emerged. Most of the seed has rotted. The thin stand which will soon emerge can not be expected to produce profitable crops, as has been shown by experiments in former years with winter cereals sown in the spring later than March. Most of the plats will be reseeded to spring grains.

The need in Harney County for seed of early-maturing spring cereals has been met to a considerable extent with the varieties found best in the experiments at the Substation, seed of which had been increased both at the Substation and on the cooperative farms in various parts of the county. Over half of the wheat acreage this year will be of the Early Baart variety, grown from the original 5 pounds obtained in 1913. The best varieties from the Substation are being sown generally in central Oregon.

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1917.

May 4, 1917.

OFFICE NOTES.

Galley proof of Farmers' Bulletin 827, Shallu, or "Egyptian Wheat," a Low-yielding Grain Sorghum, by Benton E. Rothgeb, was read during the week of April 30.

Special attention is called to the following memorandum of the Secretary regarding the appointment of a Committee on Seed Stocks:

April 21, 1917.

MEMORANDUM NO. 200.

Appointment of a Committee on Seed Stocks.

A Committee on Seed Stocks, composed of the following members, is hereby appointed:

R. A. Oakley, Chairman,	Agronomist, Forage Crop Investigations, Bureau of Plant Industry.
L. M. Estabrook	Chief, Bureau of Crop Estimates.
William A. Wheeler	Specialist in Marketing Seeds, Office of Markets and Rural Organization.
John E. W. Tracy	Assistant Superintendent of testing gardens, Bureau of Plant Industry.
William Stuart	Horticulturist, Bureau of Plant Industry.
C. P. Hartley	Physiologist in Charge of Corn Investigations, Bureau of Plant Industry.

A. J. Pieters	Agronomist, Forage Crop Investigations, Bureau of Plant Industry.
C. W. Warburton	Agronomist, Cereal Investigations, Bureau of Plant Industry.

The Committee immediately will take steps to secure full information regarding available seeds and seed stocks for staple food crops, including corn, wheat, oats, barley, rye, potatoes, flax, beans, peas, soy beans, kafir corns and sorghums, and the needs of special localities or regions for such seeds. It will also consider questions relating to the growing and distribution of seed stocks. It will inventory and ascertain the amount and price of seeds available and the probable shortages in particular regions and will advise as to means for meeting such shortages.

The Committee will confer and cooperate with the States Relations Service, the Bureau of Crop Estimates, and such specialists in the Bureau of Plant Industry as may be necessary, and will report directly to the Office of the Secretary.

D. F. Houston.
Secretary.

FIELD NOTES.

VIRGINIA:

Arlington Farm. May 4. Weather conditions in the past two weeks have been generally fair with frequent showers. Although cereal crops have made a satisfactory growth the soil is still quite cold and wet, especially where the ground is constantly shaded.

Winter wheat in the varietal experiments is in good condition and making satisfactory growth. Winter barley and rye in the varietal experiments have made normal development and are now heading. Winter oats have almost

entirely overcome the effects of the caustic spraying solution which was applied to kill chickweed and are making good growth, although they are not so far advanced as usual. Marquis wheat sown this spring has emerged with a good percentage of germination. Trimming of field plats to the required dimensions has been finished, and the work of weeding the cereal nursery is under way.

Maximum temperature for the past two weeks, 87 degrees (May 19); minimum, 42 degrees (May 23); precipitation for the month of April, 2.36 inches.

TEXAS:

Amarillo Cereal Field Station. April 28. Winter wheat looks remarkably good in spite of the dry weather. Spring wheat and oats have germinated and emerged very irregularly and have made practically no growth. Some of the seed is still dry in the soil.

There has been a large demand for grain-sorghum seed.

Maximum temperature, 88 degrees (April 23); minimum, 25 degrees (April 8); precipitation for April to date, 0.61 inch; for the past six months, 1.61 inches. The Weather Bureau office in Amarillo reports 3.09 inches for the same period. The variation is due largely to the difference in the measurements of the snow. The average wind velocity has been about normal, although there have been high winds at times which have caused considerable soil blowing.

SOUTH DAKOTA:

Highmore Substation. April 30. Less than 15 per cent of the normal acreage of small grain is seeded yet because of the continued rainy weather and low temperatures. Stocks of seed wheat intended for seeding are being sold because of the lateness of the season.

Some work is being done to increase the acreage of corn, especially on sod, where it will need no cultivation and the ground can be easily put in condition for a crop of small grain next season.

Precipitation for the past week, 1.03 inches.

May 2. The weather is more favorable for field work. It was possible to plow stubble ground yesterday and seeding can be begun again today. Most farmers are prepared to take advantage immediately of weather conditions that will allow field work.

Bellefourche Experiment Farm (Newell). April 30. It was too wet during the past week to do any seeding and very little other field work was done. Rain or snow fell nearly every day. Maximum temperature, 65 degrees; minimum, 28 degrees; precipitation, 1.15 inches.

Farm work in the vicinity of the Farm is very much delayed because of unfavorable weather and it is already very late to seed small grains.

NORTH DAKOTA:

Dickinson Substation. May 1. Wheat, oats, and barley have been sown both in the varietal and in the rotation plats. The stormy weather, together with the wet or frozen condition of the soil, has prevented field work more than half the time during the month of April. Precipitation for the month, 1.10 inches.

Frequent showers, snow squalls, and much cloudy weather have greatly delayed seeding operations in the vicinity of the Substation. All vacant lots in Dickinson are being planted to garden crops. A large acreage of navy beans will be planted in the vicinity, in areas varying in size from small garden plats to fields of from 5 to 30 acres.

Agricultural Experiment Station (Fargo). April 30. Very little field work has been done in the vicinity during the past two weeks because of rain. Maximum temperature, 58 degrees (April 23); minimum, 28 degrees (April 26); average maximum, 48.9 degrees; average minimum, 32.5 degrees; precipitation, 0.74 inch, mostly in the form of snow.

Northern Great Plains Field Station (Mandan). April 30. The weather during the past week has been generally cloudy, cold, and damp. The frost is practically out of the ground, however, and all of the wheat, oats, and barley have been seeded.

Maximum temperature, 57 degrees (April 23 and 24); minimum, 23 degrees (April 26); precipitation, 0.53 inch.

Williston Substation. April 28. Wheat, oats, barley, and miscellaneous cereals have been seeded in field plats. Most of the rod-row sowings have been made, with the exception of flax. The seeding of 545 rows of wheat in the classification nursery has been done. Wheat, oats, barley, and flax seeded in the first date-of-seeding experiment have not yet emerged because of the unfavorable weather. Maximum temperature, 67 degrees; minimum, 27 degrees; precipitation, 0.81 inch.

Little field work has been done anywhere in this part of the State.

UTAH:

Nephi Substation. April 28. Crops made considerable growth during the past week. The prospects for winter wheat are improving each day. Spring cereals sown on April 11 and 12 began to emerge on April 26.

Soil moisture determinations in the regular plats used for this purpose were completed on April 26. Plats that were fallowed in 1916 and sown to winter wheat in the fall are well supplied with moisture to a depth of 6 feet. On plats that were cropped in 1916 the fall and winter precipitation penetrated to a depth of about 3 feet, and below this level these plats are relatively dry.

Maximum temperature during the week, 74 degrees; minimum, 31 degrees; precipitation, 0.84 inch.

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May 11, 1917.

OFFICE NOTES.

Mr. Chambliss returned on May 7 from his trip to points in Louisiana, Texas, Georgia, and South Carolina in the interests of rice investigations.

Dr. H. V. Harlan left Washington on May 10 for points in Kansas, Nevada, California, and Illinois in the interests of barley investigations.

Mr. C. H. Clark left Washington on May 7 for Minneapolis, Minn., to begin a campaign for a material increase in the flax acreage this year. The production of flax in the United States in 1916 was only about 15,500,000 bushels, while our normal consumption is between 28,000,000 and 30,000,000 bushels. Because of the failure of the Argentine crop and the small production of flax in Canada on account of the use of the land for food crops, only about 6,000,000 bushels will be available for import from those countries. As the next Argentine crop does not mature until the spring of 1918 and it is probable that the Canadian crop will again be short, there is every reason to believe that farmers in this country will obtain high prices for flax next fall and winter. In addition, new land which is broken and seeded to flax this year will be available for increasing the acreage of wheat next spring.

Field men in the flax-producing States are urged to cooperate with Mr. Clark and to use every effort in increasing the flax acreage in their territory. Information regarding surpluses or shortages of seed supplies should be sent to him at 326 Flour Exchange, Minneapolis.

FIELD NOTES.

VIRGINIA:

Arlington Farm. May 11. The weather during the past week has been cloudy, cool, and windy. Cereal crops have been much benefited by the rains and are making satisfactory growth. Maximum temperature for the week ending May 9, 68 degrees (May 2); minimum, 43 degrees (May 6-7); precipitation, May 1 to 9, inclusive, 1.15 inches.

The stock solution of sodium arsenite for killing weeds, referred to in the Cereal Review of May 4, was made by mixing 75 pounds of white arsenic, 60 pounds of caustic soda (90 per cent); and 25 gallons of water. One gallon of the stock solution contained approximately 4 pounds of sodium arsenite. One and one-half gallons of the solution, or 6 pounds of sodium arsenite, when mixed with 50 gallons of water was found to be sufficiently strong to kill chickweed when sprayed over an area of approximately three-fourths of an acre. It was also found that by respraying the weed-infested area before the grain had developed too much foliage more satisfactory results were obtained.

TEXAS:

Amarillo Cereal Field Station. May 5. The weather continues dry. The crop outlook is discouraging. Much of the wheat is now past help and the small-grain crop will be practically a failure if it does not rain soon. The soil is dry and grain sorghums can not be planted until there has been some precipitation. During the past week the weather was quite warm for two days but generally it has been cool. Maximum temperature, 84 degrees (May 1); minimum, 29 degrees (April 29); wind velocity, 9.1 miles per hour; no precipitation; evaporation, 1.736 inches.

OKLAHOMA:

Woodward Field Station. May 3. The second seeding in the date-of-seeding experiments was made on May 2. The varieties and the acreage were the same as in the first seeding. There is a fair stand from the first seeding; the milo emerged in 10 days,- the broomcorn in 11 days,- and the kafir and Sumac and Red Amber sorgos in 12 days. Because of the cool weather the emergence of crops is slow and growth weak. Total precipitation for April, 1.56 inches.

WYOMING:

Cheyenne Experiment Farm (Archer). May 5. Only about 10 per cent of the winter wheat on fallow is now alive. That sown on stubble has made little growth but is in good condition. The spring grains seeded in the date-of-seeding experiment on April 16 have not emerged. The May 1 date-of-seeding was not made until May 4 because of the unfavorable weather. Barley and oats in the varietal experiment were also seeded on May 4.

The weather has been unseasonable since April 26. A snow storm of 4 days' duration began on that date. This was followed by rain and sleet on May 1 and 2 and today (May 5) there has been a snowfall of from 2 to 3 inches. Total precipitation for the week beginning April 26, 1.59 inches; maximum temperature, 54 degrees (May 4); minimum, 4 degrees (April 30).

Plowing is in progress in the vicinity of the Farm. Spring seeding was begun by a number of farmers yesterday. An active campaign for increased acreages of cereals and potatoes is being conducted by both State and county agents. An abundance of land is available, but the supply of seed is low and labor is scarce.

SOUTH DAKOTA:

Bellefourche Experiment Farm (Newell). May 7. The ground was too wet to permit much field work during the past week. Barley in the varietal experiment was seeded on May 5. Field work has been delayed longer this spring than in any year since the Farm was started. Maximum temperature for the past week, 56 degrees; minimum, 27 degrees; precipitation, 0.70 inch.

MINNESOTA:

University Farm (St. Paul). May 8. Winter wheat in the rust nursery was badly winterkilled. Winter wheat and winter rye have made little growth because of the cold weather. The weather and the condition of the soil have been excellent for field work, but the temperature has been so low that seed sown this spring has scarcely begun to grow. Wheat varieties seeded in the rust nursery on April 14 did not emerge until May 2. Seeding in the rust nursery was finished on May 3.

NORTH DAKOTA:

Dickinson Substation. May 7. During the week wheat and oats were sown in the nursery. The grain mixtures including flax were sown in triplicated 56th-acre plats. During the past few days the weather has been warmer, but spring-sown crops have not yet emerged. Maximum temperature for the week, 60 degrees; minimum, 24 degrees; precipitation, 0.12 inch.

Field work in the vicinity of the Substation has continued without interruption during the week. A few farmers are still sowing wheat. Considerable prairie sod is being broken and the flax acreage will doubtless be large.

Northern Great Plains Field Station (Mandan). May 8. The weather during the past week has been very favorable for seed germination. There has been no precipitation but there is abundant moisture in the soil. Flax has been seeded in all the plats and the nursery will be seeded tomorrow. Maximum temperature for the week ending May 7, 64 degrees (May 7); minimum, 24 degrees (May 2).

Williston Substation. May 5. All grain has been slow in emerging. That sown about the middle of April is just coming up. The ground is still in excellent condition. The seeding of small grain, with the exception of flax and millet, in plat experiments and the nursery has been finished.

Farmers in this section have nearly finished seeding wheat and oats. If present weather conditions continue for a few days they will be ready to plant corn, potatoes, and flax.

IDAHO:

Aberdeen Substation. May 2. The dry-farm portion of the Substation will be reseeded this week. Wheat, oats, and barley have been seeded in the varietal experiment. Peas have also been planted on the dry land. Sugar beets for seed are to be planted this week.

There is a great demand for wheat, oats, barley, and potatoes. There will be an increase this year of from 400 to 500 per cent in the potato acreage and from 15 to 20 per cent in the wheat acreage. Thirteen hundred and fifty acres of peas have been contracted for and about 800 acres will be inoculated with pea culture.

It is estimated that 15 to 20 per cent more land will be under cultivation this year, although much of the seeding will be late. More land has been sold in the Aberdeen country so far this year than during the previous four years.

The weather remains cold and the soil on irrigated land is mostly too wet to work. Dry-land farmers are just beginning to work the land preparatory to spring seeding. There is much activity in farming operations. New gas tractors are being brought in to help turn over the land. Feed is very scarce and only the very best stock has been preserved, resulting in a shortage of motive power. Implement dealers advise that gas tractors not contracted for can not be obtained for this year's delivery. The lack of power machines will cause much late seeding, as land can not be plowed until the equipment is available.

UTAH:

Nephi Substation. May 5. Spring cereals sown on April 10 and 11 emerged on April 28 and stands probably will be good. Because of the cold, wet weather during the past week crops have made little growth. It has been impossible to work the soil on account of the excessive moisture. The total precipitation during the past 10 days has been about 1.60 inches. Spring plowing for fallow has not been begun. Weeds and volunteer grain are making little growth, however.

OREGON:

Eastern Oregon Dry-Farming Substation (Moro). May 5. The months of March and April of this year were the coldest on record. Mean temperature for March, 36 degrees; for April, 44 degrees; maximum temperature recorded so far this year, 66 degrees (April 9); minimum for April, 29 degrees (April 9). Precipitation for April, 1.32 inches, which is about twice the normal. This was distributed over 14 days, the most in any one day being 0.3 inch.

All winter grains, with the exception of rye, have been making very slow growth. Many were in the ground a month before emerging. A good stand of all

spring-sown grains has been obtained. Sowing of all crops, with the exception of corn, is finished. Corn planting is now in progress. The spring nursery all has emerged. The stand is much better than last year. The winter classification nursery has suffered very severely from winterkilling. It has been estimated that about 20 per cent of the rows are entirely killed and of the remainder many have only a few plants.

Standardized methods of nursery seeding have been adopted. All rows are one foot apart. With the exception of the head rows, all nursery tests of wheat are based on single or on replicated rows 16 feet long. Nursery rows of barley are 20 feet long and those of oats 30 feet long. The usual number of replications is three.

A replication experiment to determine the reliability of replicating small units (1 rod rows) in the determination of yields is being continued. Every variety grown in the regular 20th-acre plats is included. These have been sown with a Planet Jr. drill in such a manner that they can be harvested as rod rows, replicated 24 times. The comparison of 24 replications of a rod row probably will give some interesting and valuable information after data have been collected through several years.

Mr. Hungerford has finished his seeding in the P. glumarum nursery. He has outlined several tests to determine varietal susceptibility in the spring varieties of wheat. The problem of determining the influence of centers of infection in the dissemination of this rust is very important and is being given considerable attention. With the large number of spring and winter varieties of wheat grown in the classification nursery, an excellent opportunity is afforded for studying varietal susceptibility. A new nursery drill has been constructed which has proved to be a valuable addition to the Substation equipment.

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May 18, 1917.

OFFICE NOTES.

Mr. J. H. Parker returned on May 17 from his trip to points in the southern States in the interests of cereal rust investigations.

Mr. Juji Kasahara, chemist of the Dai Nippon Brewing Co., and Mr. K. Tachiki, of the Kabuto Beer Brewing Co., Ltd., Tokyo, Japan, were visitors at the Office during the week.

Mr. C. W. Pugsley, Director of the Agricultural Extension Service, University of Nebraska, visited the Office on May 18.

Attention is called to Executive Order No. 2570 of April 2, 1917, quoted in Memorandum No. 201 of the Office of the Secretary of Agriculture, dated April 22, 1917:

"In view of the present emergency conditions and until further notice, the Civil Service Commission is directed to refuse examination to any person who is, or has been within three months of the date of the examination, employed in the Government service, or to certify any such person who is on the eligible register of the Commission, unless such person submits the written assent of the Department or office in which he is or has been employed to his taking such examination or to his being so certified. Such assent shall be based solely upon the finding, after due consideration, by such Department or office that the person can render better service for the Government in the place for which the examination is held.

This order is issued solely because of the present international situation and will be withdrawn when the emergency is past."

From The Official Bulletin, published daily under order of the President by the Committee on Public Information, the following quotation on seed distribution is taken:

"The Department of Agriculture issues the following: No seed for free distribution nor for sale is at the disposal of the United States Department of Agriculture. The department, however, through its committee on seed stocks, is receiving daily telegraphic and other reports as to available supplies of seeds of crops for late planting, and will assist in locating seed stocks for localities where shortages exist. The committee is cooperating with State, local, and commercial agencies in an effort to secure better distribution of seed and to encourage plantings of all important crops.

Information regarding shortages and surplus stocks should be addressed to R. A. Oakley, chairman committee on seed stocks, United States Department of Agriculture, Washington, D. C."

FIELD NOTES.

VIRGINIA:

Arlington Farm. May 18. Winter barley in nursery and field plats is almost fully headed. Winter wheat and oats are beginning to head. Winter rye is just coming into bloom. The weather during the past week has been generally fair with considerable wind. Maximum temperature for the week ending May 16, 81 degrees (May 16); minimum, 39 degrees (May 10-11); no precipitation.

GEORGIA:

State College of Agriculture (Athens). May 17. All varieties of wheat and rye are fully headed and are making very satisfactory growth. A small field of spring oats seeded where the winter oats were killed is making very poor growth.

Tifton Substation. The earlier varieties of wheat and oats were harvested on May 14. Five varieties of barley were all failures. Most of the varieties of wheat, oats, and rye made fairly satisfactory growth.

Quitman Substation. All the earlier varieties of wheat, oats, and rye were harvested on May 15. All grains were badly infected with rust. On some of the wheats the heads are dying before maturity, due apparently to this cause. Bicknell and Culberson oats were injured but slightly by cold, but only a few of the plants produced heads and those that did lodged soon after heading.

TENNESSEE:

Agricultural Experiment Station (Knoxville). May 17. Wheat is beginning to head and notes are being taken on leaf-rust infection. A strong infection of both leaf-rust and stem-rust has been obtained and many interesting facts are being observed.

On a recent trip through Knox and adjoining counties it was observed that small grains of all kinds are at least two weeks later than usual. The acreage has been much reduced by winterkilling. Many fields have been plowed up and planted to corn, although some spring oats have been sown. The weather during the past two weeks has been very unfavorable for growing crops. Maximum temperature, 66 degrees; minimum, 43 degrees; slight precipitation.

TEXAS:

Amarillo Cereal Field Station. May 12. The long drought was broken on May 5 by rain which later changed into snow. About 8 inches of snow fell between 9:30 p. m., May 5, and 10:00 a. m., May 6. Most of the snow had melted by night. A heavy frost during the night destroyed nearly all the fruit and killed the leaves on the black locust and some of the honey locust trees. As yet there is no indication that any injury was done to the winter rye which was heading and to the winter wheat which was well jointed and ready to head. The precipitation during the week has benefited winter grains. Two plats of winter wheat, Nebraska Hybrid No. 28 (C. I. No. 5147) from Hays, Kansas, began to head on May 8 and 10. The spring-sown grains are just beginning to emerge. A small percentage emerged shortly after seeding but much has lain in the dry soil until now.

Maximum temperature, 64 degrees (May 12); minimum, 25 degrees (May 7); precipitation, over 2 inches; very little wind.

KANSAS:

Fort Hays Experiment Station (Hays). May 10. Spring grains seeded April 17 and 18 have emerged to good stands. The first seeding in the date-of-seeding experiment with dwarf and pink kafir, dwarf milo, and feterita was made on May 9. Corn was planted on bottom land and upland in the cereal project on May 8. Precipitation in April, 1.96 inches, as compared with normal of 2.25 inches. Total precipitation during the period from Jan. 1 to May 1, 2.12 inches, which is 2.59 inches less than normal.

Crop development has been slow because of the cold spring. Pastures are short. Wheat does not look good and the harvest probably will be two weeks late.

A large acreage of corn and grain sorghums is being planted. The ground is in excellent condition,

particularly that plowed in the fall. The local organization in Ellis County has been successful in obtaining and distributing seeds of all kinds to farmers. Boys' and girls' clubs have been formed for planting kafir, milo, and feterita and for gardening and canning.

WYOMING:

Cheyenne Experiment Farm (Archer). May 12. The weather since May 10 has been favorable for seeding. Durum and spring common wheats were seeded on May 10. Spring grains seeded April 16 are emerging. Maximum temperature for the past week, 61 degrees (May 11); minimum, 10 degrees (May 5); precipitation, 0.55 inch.

Farming operations in the vicinity are much later than usual. Many farmers have yet to do considerable plowing for spring cereals, while a few have begun seeding.

SOUTH DAKOTA:

Bellefourche Experiment Farm (Newell). May 14. The weather of the entire week was favorable for field work. Seeding of small grains and flax in the plats and in the nursery was finished. Grain seeded in April has now emerged. Winter wheat in the irrigated plats has started growth but that on the dry-land plats is nearly all dead. The progeny of about 400 head selections of Kharkov and Ghirka Winter made during 1915 and 1916 were entirely destroyed. Maximum temperature for the past week, 69 degrees; minimum, 28 degrees; precipitation, 0.02 inch.

Agricultural Experiment Station (Brookings). May 10. During the past week Mr. Champlin inspected the work at the Highmore and Eureka substations. At the latter all of the cereal seeding is finished. The rolling nature of the land permits its cultivation, even though there has been an abundance of rain. At Highmore seeding is nearly finished, although it was much delayed by the continuous wet weather of the past three weeks.

Mr. Champlin also investigated the feed grain situation at Aberdeen, S. Dak. Elevators and feed warehouses are not taking in any grain from the farmers of that locality. One elevator man stated that he could get grain from Minneapolis cheaper and easier than it could be obtained from the farmers in his vicinity. At Eureka the same conditions obtain. At present weather conditions are favorable and seeding is well advanced.

About 2,000 bushels of Swedish rye (Minn. No. 2 or S. Dak 348) were distributed in Spink County last fall. It was observed that fields of this pedigreed rye were noticeably superior to those of the common rye. The stand was more even and the plants seemed to have made more vigorous growth. Winter wheat has survived the winter best when sown in grain stubble. Of that seeded in corn stubble only about a quarter to a third of a stand has survived, while that on summer fallow and fall plowing is practically all killed.

May 12. Crops are improving rapidly in condition. Spring grain is emerging satisfactorily and there is an abundance of moisture in the soil. Seeding is nearly finished and farmers are preparing their ground for corn.

Highmore Substation. May 9. Since May 4 weather conditions have been favorable for field work and a large acreage of small grain is being seeded even though the season is so far advanced. This is in response to the President's appeal to the farmers.

Precipitation for the month to date, 0.23 inch.

May 12. Seeding of cereals is finished and corn planting will start soon. Early-seeded grain has emerged and is making rapid growth.

Nearly 90 per cent of the small-grain seeding is done in this section. The acreage is large, particularly that of early oats and barley. The spring-wheat acreage is hardly normal. The flax acreage will be largely increased and a large acreage of alfalfa is being seeded. Plowing for corn is in progress, and the acreage will be greatly increased.

NORTH DAKOTA:

Agricultural Experiment Station (Fargo). May 14. Field work has made marked progress during the past two weeks because of the favorable weather. Early-sown grain has emerged and is making good growth. Maximum temperature for the past week, 70 degrees; minimum, 34 degrees.

Dickinson Substation, May 12. During the past week the weather has been warm and favorable for plant growth. With the exception of proses and grain sorghums, the seeding of small grains in plats and nursery has been finished. Wheat and oats in plats and nursery are emerging. Maximum temperature for the past week, 68 degrees; minimum, 28 degrees; no precipitation. Rain is needed for the germination of late-sown crops.

Field work is progressing favorably in the vicinity of the Substation. Seeding oats, barley, and flax is in progress.

Northern Great Plains Field Station (Mandan). May 14. Wheat, oats, barley, and flax seeded on April 19 emerged during the past week. The May 1 seeding in the date- and rate-of-seeding experiments emerged today and the crops on varietal plats seeded on May 4 and 5 have begun to emerge. Flax was seeded in the varietal nurseries last week and today part of the hybrid nursery was seeded. Maximum temperature, 56 degrees (May 14); minimum, 32 degrees (May 11). The soil thermograph registered a maximum temperature of 56 degrees (May 13) and a minimum of 40 degrees (May 8); no precipitation.

Williston Substation. May 12. Grains have made good growth because of the favorable weather of the past week. Rain would be of much benefit to all growing crops. Maximum temperature, 72 degrees; minimum, 31 degrees; precipitation, trace.

Seeding of wheat in the vicinity is not yet finished. Almost all of the oats and barley has been seeded.

UTAH:

Nephi Substation. May 13. Spring cereals have emerged with good stands. Corn in rotations, corn varieties, and bean varieties were planted on May 11. Potatoes were planted in the rotations on May 12. Winter wheat looks good, although it is more backward than usual. Maximum temperature for the past week, 66 degrees; minimum, 29 degrees; precipitation, 0.39 inch.

OREGON:

Harney County Dry-Farming Substation (Burns). May 10. The seeding of crops on dry land in increase and experimental plats is nearly finished. In the plats on the new 10-acre tract on irrigated land seeding will be completed soon. It was necessary to reseed the winter wheat plats with spring wheat as most of the seed had rotted in the ground and the small percentage that emerged did not come up until May 1. A fair stand of some varieties of winter rye was obtained from fall-sown grain, which emerged about April 25. The spring has been cold and dry. Maximum temperature in April, 70 degrees; minimum, 17 degrees; precipitation, 0.38 inch. Precipitation during the period from Sept. 1, 1916, to April 30, 1917, only 3.57 inches.

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May 25, 1917.

OFFICE NOTES.

First page proof of Farmers' Bulletin 827, Shallu, or 'Egyptian Wheat,' a Late-Maturing Grain Sorghum, by Benton E. Rothgeb, was read on May 19.

Farmers' Bulletin 800, Grains for the Dry Lands of Central Oregon, by L. R. Breithaupt, was delivered by the Government Printing Office on May 21.

Dr. H. V. Harlan, writing from Manhattan, Kans., on May 17, confirms the report that winter wheat is in very bad condition in that State. He believes that with fair seasonal conditions the biggest corn crop in the history of Kansas will be harvested this year. Oats were seeded in the central part and barley in the northwestern part on much of the abandoned wheat acreage, while the remainder has been planted to corn. He reports that in the southwestern part of Kansas, on a considerable number of farms that he visited, from 1 to 10 acres of land not usually cultivated have been planted to corn this year. Feed lots were reduced in size, waste corners along ravines were plowed up, and most of the orchards are being intertilled.

FIELD NOTES.

TENNESSEE:

Agricultural Experiment Station (Knoxville). May 24. Wheat is fully headed and notes on leaf-rust infection have been taken. Although a very severe epidemic was secured in the nursery a few varieties

showed a remarkably small amount of infection. The stem-rust infection is increasing rapidly and many varieties will be severely injured before harvest.

Two heads of rye infected with loose smut were found in a small plat of rye. This fungus has not been noticed here before.

Crop development is slow because of the continued cold weather.

Maximum temperature for the past week, 78 degrees; minimum, 48 degrees; precipitation, 0.90 inch.

Dr. A. G. Johnson was a visitor at the station on May 21.

TEXAS:

Amarillo Cereal Field Station. May 19. Spring wheat and oats have emerged sufficiently to make a fair stand, but the prospects for a grain crop from these plats are not very good. Winter grains have made excellent growth since the rains. Winter barley and several of the winter wheats are heading.

The early plantings of grain sorghums and broomcorn have been made. The soil is in excellent condition and they should make a good start. Maximum temperature for the past week, 89 degrees (May 19); minimum, 46 degrees (May 17); precipitation, 0.46 inch (May 13); moderate winds; evaporation below normal. A hail storm on Sunday evening (May 13) did no special damage to crops at the Station although the largest hail stones measured 1¼ inch in diameter. Considerable damage was done by this storm a few miles east of the Station.

WYOMING:

Cheyenne Experiment Farm (Archer). May 19. Because of very favorable weather all wheat, oats, and barley varieties have emerged or are emerging. Fallow land on which winter wheat winterkilled, with

the exception of a small block of increase wheat adjoining grass land, has been disked and seeded to durum wheat. Winter wheat on stubble is making rapid growth. Varieties of peas and the cereal nursery were seeded during the week. Twenty-nine acres of land on the experimental area and 36 acres on the forage field were plowed with a gas tractor from May 12 to 15.

Seeding of spring grains, with the exception of flax, is well under way in the vicinity of the Farm. A number of farmers are planning to seed flax about the last week of the month.

SOUTH DAKOTA:

Highmore Substation. May 21. Weather conditions were favorable for farm work and crop growth until May 20, since when it has rained steadily. This precipitation of more than 1.50 inches will benefit all growing crops and will make easier spring plowing for corn. About 95 per cent of the small grain is seeded and 30 per cent of the corn has been planted.

A large acreage of corn is being planted on old ground and farmers expect to greatly increase the acreage of corn and flax on sod broken this spring. The prospects are excellent for all crops.

MINNESOTA:

University Farm (St. Paul). May 19. Seeding of the fertilizer plats was finished on May 9 and of the loose smut treatments on May 12, with the exception of barley. The weather of the past two weeks has been ideal for growing crops. Now growth is very slow, however, because it is so dry. In the eastern and northeastern parts of the State, there has been no precipitation of consequence for at least 3 weeks. In the latter section forest and brush fires are very serious and only a good

rain can relieve the situation. In the western part of the State grain is said to look better than for many years. Although the early part of the season was wet and cold, no rust has been found in this locality. The barberries have leaves an inch long but no cluster cups have yet been seen on them. Field inoculations from greenhouse material will be started in the rust nursery on May 21.

NORTH DAKOTA:

Dickinson Substation. May 19. The warm weather of the past week has caused rapid germination and growth of crops which will partly offset the lateness of seeding. All cereal crops in the various tests have emerged or are emerging with fairly good stands. As no rain has fallen this month the surface soil is dry and late-sown crops which are now emerging probably will be uneven in stand.

Seeding of oats in the vicinity is nearly finished and barley, flax, and corn are now being planted. The acreage of barley and flax probably will be much larger than usual. Maximum temperature for the past week, 90 degrees (May 15); minimum, 27 degrees (May 17); no precipitation.

Northern Great Plains Field Station (Mandan). May 22. Flax and the cereals have germinated very well but will soon need more moisture. Seeding of the nursery was finished this morning and only the two latest seedings in the date-of-seeding test remain to be done.

Maximum temperature for the past week, 89 degrees (May 15, 17); minimum, 36 degrees (May 18); precipitation, trace (May 19, 21). The soil thermograph registered a maximum temperature of 65 degrees (May 16); minimum, 49 degrees (May 21). There was much wind during the week.

Williston Substation. May 21. All grains look good. Rain would be of benefit, as the ground is drying fast. The ground is dry to a depth of 2 to 4 inches in most places and grain seeded during the past week may germinate unevenly. On a recent trip through the farming sections in the vicinity of the Substation it was observed that wheat is still being seeded and that very little flax has yet been sown. Considerable oats and barley are yet to be seeded. Maximum temperature for the past week, 93 degrees; minimum, 33 degrees; no precipitation.

UTAH:

Nephi Substation. May 20. The weather of the past week has been favorable for crop growth and field work. Winter wheat is about 6 inches high and looks good. Plowing was begun on May 14. The soil is in good condition but is drying out fast. It is difficult to get men and teams this spring; men are scarce and horses are poor.

Most of the winter wheat on the Levan Ridge is in good condition, although there are a few fields with thin stands. From present indications yields will be normal and possibly above normal if usual weather conditions obtain until harvest time. A fair crop of alfalfa and good fruit crops will be obtained unless a frost occurs in the near future.

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U. S. DEPARTMENT OF AGRICULTURE.

VOLUME 9.

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1917.

June 8, 1917.

OFFICE NOTES.

Owing to the large amount of clerical work in the preparation of material for use at the Interstate Cereal Conference during the period from June 12 to 15 inclusive, the issue of June 1 of the Cereal Review was omitted and this issue combines notes for two weeks.

Mr. Geo. H. Godfrey was transferred to the Office of Cotton and Truck Investigations, Bureau of Plant Industry, on June 1, 1917.

Mr. J. Allen Clark left on June 3 for an extended trip through the West in the interests of western wheat investigations.

Dr. Harlan returned to Washington on June 5 from his trip to Tennessee, Kansas, Nevada, and California in the interests of barley investigations.

Dr. Humphrey left Washington on June 6 for points in the South and West in the interests of cereal disease investigations.

Attention is called to Secretary's Memorandum No. 204, dated May 19, regarding lost passenger transportation requests:

The attention of administrative officers is invited to the fact that carelessness on the part of employees has resulted recently in numerous losses of unused passenger transportation requests. As the Department (and indirectly the employee to whom a request is issued) is responsible to the transportation company for the value of the ticket issued on a request, even though the request be presented by an unauthorized person, action should be taken at once to impress upon all employees the necessity for exceptional care in the handling of unused requests. In the event of loss of a request, the fact should be immediately reported to the Office of Inspection of the Office of the Secretary in order that notices may be sent out to the traffic associations. No attempt should be made to use a request, the loss of which has been previously reported; such a request, when recovered, should be promptly forwarded to the Office of Inspection for appropriate action.

D. F. Houston,
Secretary.

Oregon Agricultural Experiment Station Bulletin 144, entitled "Dry-Farming Investigations at the Sherman County Branch Experiment Station," has been received. This bulletin is by D. E. Stephens, Superintendent, and C. E. Hill, Scientific Assistant. It contains a summary of the weather data recorded during the past six years at Moro, and the average yields of the cereal varieties produced during the four years, 1913 to 1916, inclusive. The results of experiments with field peas, alfalfa, sweet clover, and other forage crops, corn and potatoes are also given, as well as those of tillage experiments with winter wheat.

Copies of this bulletin may be obtained from the Oregon station or from Mr. Stephens at Moro.

THE

THIRD INTERSTATE CEREAL CONFERENCE

Kansas City, Mo.

June 12, 13, 14, 1917.

Executive Committee

R. W. Thatcher, Chairman, University of Minnesota
Chas. E. Chambliss, Sec'y, U.S.Department of Agriculture
M. A. Carleton, U. S. Department of Agriculture
L. A. Fitz, Kansas Agricultural Experiment Station
F. J. Seidl, Gould Grain Company, Minneapolis

Headquarters: Coates Hotel.

Program
Tuesday, June 12
Morning Session 9:30 - 12:00

Nat C. Murray: Analysis of the World's Wheat Supply.
L. E. Call: The Preparation of Land for Wheat.
C. E. Leighty: Increasing the Production of Cereals by breeding.
W. L. Oswald: The importance of Testing Spring Wheat for Germination.

Afternoon Session 2:00 - 4:30

J. W. T. Duvel: Federal Standards for the Grading of Wheat.
R. C. Miller: Weed Seeds in Relation to Grain Grading.
L. H. Pammel, H. R. Cates & L. W. Kephardt: The Control and Eradication of Weeds of the Grain Field.
Alvin Kezer: The Use of Adapted Varieties.

Evening Session 8:15 - 10:00.

Treatment of Seed Grain for the Prevention of Smuts.

M. A. Carleton: Introduction.
H. B. Humphrey: Discussion and Demonstration.

Wednesday, June 13

Morning Session 9:30 - 12:00

W. M. Jardine: Agricultural War Measures in Kansas.
Fred. D. Richey: Corn as a War Crop.
E. C. Johnson: Waste in Cereal Production on the Farm.
H. L. Bolley: The next Step in Improvement in Wheat Cropping.

Afternoon Session 2:00 - 4:30

J. A. Le Clerc: The Use of Barley as a Food.
G. E. Thompson: The Importance of Grain Sorghums in Kansas.
C. K. Francis: The Starch and Ash Content of Grain Sorghums.
B. E. Rothgeb: Grain Sorghum Experiments in the Texas Panhandle.

Thursday, June 14.
Morning Session 9:30 - 12:00

E. Brown: The Importance of Good Seed.
Wm. A. Wheeler: The Work of Committee on Seed Stocks, U. S. Department of Agriculture.
G. A. Dean: The Control of Cereal Insects.
E. C. Stakman: Measures for Decreasing Grain Rusts.

FIELD NOTES.

VIRGINIA:

Arlington Farm. June 1. Winter oat varieties are heading but are not so far advanced as under normal conditions. Barley varieties in both field and nursery plats are maturing and are in good condition. Practically all winter wheat varieties are fully headed and are in excellent condition. Grain sorghums in the environmental experiment were sown on May 25. Marquis wheat sown this spring is making good growth since the recent rains. The weather of the past week has been cool and stormy but favorable for the growth of cereal crops. Maximum temperature, 90 degrees (May 27); minimum, 45 degrees (May 26); precipitation, 1.06 inches. Total precipitation for the month of May, 2.21 inches; this is 0.57 of an inch below normal.

June 8. Winter barley varieties both in field and nursery are practically all ripe. Rye varieties have filled well and are beginning to ripen. Winter wheat is fully headed. Winter oats are heading, while a few of the earlier varieties are fully headed. The work of rogueing out foreign material in the cereal varieties preparatory to harvesting is under way.

TENNESSEE:

Agricultural Experiment Station (Knoxville). June 1. The weather of the past week has been favorable for plant growth, although the temperature was somewhat below normal.

The recent rains have been of much benefit after the dry weather of the past three weeks. Wheat is fully headed and is making good growth. Stem rust has appeared in the wheat plats and is increasing rapidly. Leaf rust infection is already very heavy and from present indications stem rust will do considerable injury before the grain matures. In the rust nursery the stem rust continues to increase and in many varieties the heads are already heavily infected.

June 8. Wheat is in the soft dough stage and is making good growth because of the favorable weather. Spring oats look fairly good although large yields are not expected. Much corn has been planted throughout the State and large yields are expected.

Dr. Humphrey was a visitor at the Station on June 8.

Maximum temperature for the past week, 94 degrees; minimum, 48 degrees.

TEXAS:

Amarillo Cereal Field Station. May 28. Grain sorghums and broomcorn were planted during the week. Those planted on May 16 are emerging and the stands are very good. Winter grains are making good growth and most of them are heading. Spring grains do not look so good. Rain will be needed soon. Maximum temperature for the week ending May 26, 80 degrees (May 24); minimum, 39 degrees (May 23); precipitation, 0.03 inch (May 22); evaporation, 2.16 inches; wind velocity, 12.4 miles per hour.

OKLAHOMA:

Woodward Field Station. May 23. The seeding of broomcorn and grain sorghums is progressing favorably. Broomcorn was planted on 20 plats in the spacing test on May 18. On May 22, 10 plats each of kafir and milo were seeded and today the sorghum varietal test was duplicated in plats each 0.06 of an inch in size. Sorghum

sown in the varietal test on May 15 has made a good stand. The milos and kaoliangs emerged 6 days after seeding and all of the varieties have made a fair stand. The weather has been very changeable, windy, cool, and very dry. Precipitation for the month to date, 0.71 inch.

WYOMING:

Cheyenne Experiment Farm (Archer). May 26. During the past week flax was seeded in field and nursery plats. Corn planting was begun on May 24 on the Dry-Land Agriculture project but was interrupted by rain. Small-grain crops in the varietal plats have emerged with a good stand. Winter rye and wheat are making fairly rapid growth.

Rain began falling yesterday morning and today the weather is cold and drizzling. Maximum temperature, 61 degrees (May 22 and 23); minimum, 33 degrees (May 21 and 22); precipitation, 2.28 inches.

Seeding of grains in the lower altitudes of this part of the State is practically finished; in the higher altitudes considerable seeding still remains to be done. Very little corn and potatoes have been planted.

June 2. Because of the cold, rainy weather very little field work has been done during the past week. Potatoes were planted on May 29 and flax and oats were seeded on June 2 in the remaining date-of-seeding tests. Two perennial grasses and sweet clover on the disked native sod were seeded during the early part of the week. All but one plat of corn on the Dry-Land Agriculture area has been planted. Crops have made but little growth because of the cool weather. The native prairie grasses are growing rapidly and from present indications there will be enough top growth for haymaking where not pastured.

There was some precipitation each day during the week. On May 31 snow fell during the entire day but melted immediately. Maximum temperature, 57 degrees; minimum, 30 degrees; precipitation, 0.91 inch.

SOUTH DAKOTA:

Highmore Substation. May 28. The weather of the past week has been very favorable for the growth of small grains. Temperatures have been too low for best growth of corn and cane. Early-planted corn is just emerging. Winter rye is beginning to head. In the rotation work winter rye has made a heavier, taller growth where stable manure has been applied previous to the rye crop than where a green manure crop has been turned under. The plat to which no stable or green manure was applied is making a poorer growth than that on which a green-manure crop was turned under.

Precipitation for the past week, 1.77 inches. The rains and the low temperatures have given the small grains an excellent start and there is abundant moisture in the soil.

June 2. The weather has continued favorable for the growth of small grains but temperatures have been too low for corn. The seeding of kaoliang and proso was finished today. Only flax and millet remain to be seeded in the date-of-seeding tests. Early-planted potatoes are just emerging. Winter rye is headed although only about 2 feet high. Alfalfa has made a good growth and the first crop probably will be cut next week.

About 75 per cent of the corn planting in Hyde County is finished. A large acreage of amber cane is being seeded for forage purposes. A number of farmers expect to seed a considerable acreage of proso and millet on late plowing.

MINNESOTA:

University Farm (St. Paul). May 25. All spring grains have emerged and are making good growth. Corn was planted during the past week and is just beginning to emerge. Maximum temperature, 84 degrees (May 16); minimum, 32 degrees (May 24); precipitation, 0.47 inch.

NORTH DAKOTA:

Agricultural College. June 2. Seeding in this locality is finished with the exception of miscellaneous fields. Rain is needed here and elsewhere in the State. The month of May was dry and late seeding is germinating very slowly

and unevenly. There is considerable moisture below the roots and the ungerminated seed. During the past ten days there have been general frosts. In this locality these have been light and have caused no serious damage.

Mean temperature for April, 39.2 degrees; normal (35 years) 42.0 degrees; for May, 53.4 degrees; normal (35 years) 54.3 degrees; precipitation for April, 1.85 inches; normal (35 years) 2.18 inches; for May, 0.33 inch; normal (35 years) 2.89 inches.

Dickinson Substation. May 26. The dry weather has continued during the past four weeks. Cereal crops are in good condition, with the exception of flax, the stand of which, in the increase plats and in a few nursery rows, is thin because of insufficient moisture.

Early-sown crops are making fair growth, have good stands, and are not affected by lack of moisture. The stand of late-sown crops is more uneven. Much prairie is being broken and sown to flax; the stand of that which has emerged is imperfect, especially where the breaking was not immediately worked down and drilled. Barley, oats, and flax are being sown in the vicinity. Much breaking is still being done. A good rain is badly needed.

Maximum temperature for the past week, 74 degrees (May 24); minimum, 25 degrees (May 23); precipitation, trace.

June 2. During the past week the weather has been quite changeable with considerable wind. On May 30 snow fell during much of the day, making a total precipitation, including rain, of 0.35 inch for the week. This was also the total for the month. Crops look good in spite of the dry weather. Notes taken during the week in the varietal wheat plats show a uniform stand. Wheat is about 6 inches high. Winter rye is heading. Prosos and grain sorghums were seeded during the week.

Most of the corn, beans and potatoes in this vicinity has not yet emerged and therefore was not affected by the frost. Barley, corn, and flax are being sown.

Maximum temperature for May, 90 degrees (May 15); minimum, 24 degrees (May 1). A killing frost on June 1 did considerable damage to corn and tender vegetables.

Northern Great Plains Field Station (Mandan). May 28. All of the small grains and all of the flax seeded up to May 11 has emerged. The flax seeded by hand after May 11, however, has been very slow in emerging. Some of that seeded before May 16 has emerged but most of it will not come up until we have a good rain. There has been no rain all this month.

Maximum temperature for the week, 75 degrees (May 28); minimum, 28 degrees (May 22, 23, and 27). The soil thermograph registered a maximum of 62 degrees (May 28); minimum, 47 degrees (May 22).

June 4. Very little more flax emerged during the past week; however, most of it is coming through today. All of the flax and small grains in the plats, and the flax in the nursery which emerged previously, are making good growth.

Maximum temperature for the week, 72 degrees (June 3); minimum, 37 degrees (May 30 and June 4). The soil thermograph registered a maximum of 64 degrees (May 28 and June 2); minimum, 48 degrees (May 30 and 31).

Williston Substation. May 26. Because of the lack of precipitation the ground is very dry and small grains seeded during the past week are germinating unevenly in most fields. Those that require shallow seeding, particularly flax and other small-seeded grains, can not be expected to germinate without moisture. The stand of small grains seeded early is very even.

Early-sown crops in this part of the State are in excellent condition and seem not to be materially affected as yet by the lack of moisture. Many farmers are waiting for rain before seeding their flax. All vacant ground that can be worked is being utilized for cropping purposes. The potato acreage is greatly increased, more beans are being planted than usual, and the flax acreage will be greater than last year.

Maximum temperature, 78 degrees; minimum, 31 degrees; no precipitation.

June 2. Seeding has been finished. A frost of June 1 injured severely potatoes, corn, and tender vegetables.

Early-seeded grain continues to look good. That seeded since May 10 has germinated very unevenly throughout this section of the State. Fields within a radius of 15 miles of Williston look much worse than those in the vicinity of the Substation, where earlier seeding was possible. In many places the stands are very thin and patchy; probably in many places not more than 50 per cent of the grain has germinated. Many farmers expect to reseed their wheat fields with flax, allowing the little wheat to stand. Much flax has been sown during the past week and many farmers will continue to seed until June 15. Some farmers are waiting for rain before seeding.

Maximum temperature, 74 degrees; minimum, 30 degrees (June 1); precipitation, 0.37 inch (June 3). The month of May was the driest since records have been kept at Williston.

MONTANA:

Judith Basin Substation (Moccasin). May 22. Field work was begun on May 7 and cereals in the varietal plats were seeded on May 9 and 10. These have emerged and good stands have been obtained on all plats. Work was interrupted on May 19 by the first rain of the season. All previous precipitation had been in the form of snow. The weather has cleared today and the ground will be dry enough to resume work tomorrow. Nearly all seeding in the experimental plats has been finished and the increase fields of Marquis and Pelissier have been sown.

With the coming of warm weather the winter-wheat situation in the Judith Basin has improved a little and in some fields that were thought to be entirely killed there is part of a stand. It is probable that nearly 65 per cent of the winter wheat in the Basin has been killed and the stand of that which survived is poor. Farmers have been busy during the last two weeks seeding large acreages of spring wheat. Much still remains to be seeded, however, and some probably will be seeded as late as June 1. Very little oats and barley have been seeded but quite a large acreage of these grains will be put in after the spring wheat is seeded.

IDAHO:

Aberdeen Substation. May 24. Crops are making splendid growth. Warmer weather and a precipitation of 0.85 inch (May 21 and 22) caused all late-sown seed to germinate. All nursery seeding has been finished. All cereals, peas, and beets have emerged and are growing vigorously.

All cereals, peas, sugar beets, and potatoes have been planted in the vicinity of the Substation. A wire worm is injuring winter wheats on the dry land and farmers are complaining of serious losses. It is hoped that the entomologist at the University can identify the worm and suggest means to prevent further losses.

The Bingham County Farm Bureau has been organized. The Aberdeen enrollment of 75 members is the largest community enrollment in the county.

Fifteen hundred acres of peas have been planted in the vicinity of Aberdeen. Practically all fields of common alfalfa have been more or less winterkilled. All fields of Grimm alfalfa in the vicinity of the Substation have been inspected and no winterkilling has been found.

UTAH:

Nephi Substation. May 27. Winter and spring cereals are in good condition.

On the Levan Ridge winter wheat is a little backward but indications are that a good yield will be obtained. Plowing for fallow is being done much later than usual because of the wet weather. The prospects are good for a good fruit crop.

During the past week it has rained every day, the total for the week being 1.69 inches. With the moisture now in the soil the indications are that normal yields will be obtained, provided that favorable weather conditions continue until the harvest.

June 3. Winter and spring cereals are doing well, although the weather has been too cold for rapid growth. Very little plowing has been done to date because of the wet weather.

Maximum temperature for the month of May, 81 degrees (May 15); minimum, 28 degrees (May 3); precipitation, 3.28 inches; normal for May, 1.72 inches.

OREGON:

Eastern Oregon Dry-Farming Substation (Moro). May 24. During the past two weeks the weather has been cold and dry. In spite of this all grain crops have made good growth. Winter rye is beginning to head and all winter wheat is in good condition.

On May 12 careful counts were made to determine the effect of formalin treatment on stands on plats of Turkey winter wheat. On Dec. 1, 1916, 4 plats of Turkey wheat treated in the usual way for smut (1 pint to 45 gallons) were sown, one plat each at 5, 6, 7, and 8 pecks per acre. Four adjacent plats were sown with the same variety without any treatment. The difference in stand and vigor of the two series can be observed at a distance of over half a mile. The following counts of plants on 1/1000 of an acre indicate the difference in stand:

Rate, pecks per acre.	Plants per Unit Area.	
	Treated	Not treated.
5	32	66
6	48	97
7	50	95
8	58	116
Average	47	93

A number of complaints have been received from farmers who believe that their thin stands of wheat are due to treating the grain for smut.

The Turkey wheats, both in the varietal tests and in increase fields, have much thicker stands than any of the soft, white wheats like Forty Fold, Prohibition, Hybrid No. 143, and some other Washington State College hybrids.

Many more farmers than usual are planting corn in the Columbia Basin this spring. There will also be quite an increased acreage of beans. A number of farmers have planted corn in rows from 12 to 18 feet apart on ground which they had planned to summer fallow. They expect to cultivate the corn with the same implements used to cultivate the summer fallow.

Maximum temperature for the past two weeks, 74 degrees; minimum, 29 degrees (May 15); no precipitation of benefit to crops.

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OFFICE NOTES.

Messrs. Ball, Carleton, Chambliss, Humphrey, Leighty, Potter, Rothgeb, and Warburton attended the meetings of the Interstate Cereal Conference at Kansas City, Mo., and Manhattan, Kans., June 12 to 15.

FIELD NOTES.

VIRGINIA:

Arlington Farm. June 14. The work of harvesting winter barley varieties was begun during the past week but has been interrupted by the recent storms. Winter wheat has made good growth and is beginning to mature. Winter oats are nearly fully headed. Because of the recent torrential storms it will be necessary to re-seed all of the grain sorghums sown in the environmental experiment.

Maximum temperature for the week ending June 13, 86 degrees (June 12); minimum, 60 degrees (June 8-9); precipitation, 2.24 inches.

GEORGIA:

State College of Agriculture (Athens). June 9. Practically all of the grain has been harvested. Most of the varieties of wheat will give good yields. Thrashing will begin at the Quitman Substation on June 11.

TEXAS:

Amarillo Cereal Field Station. June 9. All small grains are affected by the continuous dry weather. The winter grains are nearly fully headed and in need of rain. Some are drying like cured hay. The spring small grains will be almost failures because they emerged so unevenly and late that weeds probably will choke them before they are ready to mature. Prospects for a crop are not favorable. The grain sorghums have emerged with fairly good stands, but can not make much growth without moisture.

Maximum temperatures for the past week, 94 degrees (June 4); minimum, 43 degrees (June 6); no precipitation; evaporation, 2.59 inches; wind velocity, 8.8 miles per hour. On the morning of June 2 the temperature went down to 35 degrees.

OKLAHOMA:

Woodward Field Station. June 12. In spite of the dry, hot weather the grain sorghums and broomcorn still look good. There has been but one shower since June 1, and for the last few days because of the unfavorable conditions it has been considered best to leave the crops undisturbed so as not to loosen the roots of the plants. The average wind velocity for the twenty-four hours from 8:00 a. m., June 10, to 8:00 a. m., June 11, was 20.6 miles per hour; maximum temperature for the same interval, 104 degrees; minimum, 74 degrees. Today, June 12, the temperature was higher although the wind was not so strong. The highest temperature was 109.5 degrees.

The city water supply is very low at present, and gardens and crops are materially affected by the drought.

WYOMING:

Cheyenne Experiment Farm. June 8. During the past week weather conditions have been more favorable for crop growth. In general spring crops are in good condition although backward because of the late season. Flax is

emerging slowly because of the crusted condition of the surface soil since the recent heavy precipitation. Winter wheat is beginning to grow. Field rye is from six to eight inches high. Stands of wheat, oats, barley, and emmer in the field plats have been counted, while nursery plats are being counted and thinned. Stands of all crops are satisfactory.

Spring seeding was finished today. Varieties of corn, sorghum, and millet were seeded during the week. Field corn and millet, and Sudan grass in a method-of-seeding test, were also planted during the past week.

The seeding of small grains in the vicinity of the Farm is nearly done. On every farm a small acreage is being seeded to oats and a considerable acreage to flax. Corn planting is well advanced.

Maximum temperature for the week of June 2, 72 degrees; minimum, 34 degrees; precipitation, 0.03 inch.

SOUTH DAKOTA:

Bellefourche Experiment Farm (Newell). June 11. Small grains are making some growth but are very late. Winter rye is partly headed. The soil now contains a fair supply of moisture. Because of the unfavorable weather, field work has not been possible for more than half the time during the past three weeks.

Most of the corn in the vicinity of the Farm is planted but practically none of it has emerged.

Maximum temperature for the past week, 92 degrees; minimum, 40 degrees; precipitation, 0.49 inch.

Highmore Substation. June 11. The weather during the past week has been favorable for crop growth. There is sufficient moisture in the soil, and temperatures have been nearly normal. Early in the week several light showers gave a total precipitation of 0.24 inch. Last night a precipitation of 0.40 inch was of much benefit to crops.

Flax and corn are still being planted on sod. A rather large acreage of millet and proso is being seeded on late-plowed old ground.

NORTH DAKOTA:

Dickinson Substation. Winter rye is nearly headed and other crops are growing rapidly. Notes on the stand in plats and nursery have been taken. The cultivation of the nursery is finished.

The seeding of cereal crops in the vicinity of the substation is nearly finished, with the exception of a few fields of flax and corn. During the past week considerable grain has germinated in fields where a thin stand had emerged several weeks before. Except for this unevenness in emergence, and the probable uneven maturity in some fields, the prospects for a crop are much more favorable than before the rains of the early part of the week.

Maximum temperature for the past week, 90 degrees (June 9); minimum, 35 degrees (June 4); precipitation, 1.42 inches. The early part of the week was cold and rainy; warm weather prevailed during the latter part of the week.

Northern Great Plains Field Station (Mandan). June 11. All of the flax has emerged and is now making rapid growth.

Maximum temperature for the past week, 92 degrees (June 11); minimum, 45 degrees (June 6). The soil thermograph registered a maximum temperature of 72 degrees (June 10); minimum, 49 degrees (June 6 and 7). Precipitation, 1.31 inches. This precipitation will be of great benefit to crops in this section.

Williston Substation. June 9. All grain plats look good, but grain has not made rapid growth. It is from three to five inches high. Crops have been greatly benefited by showers during the past week. A rather general rain of less than 0.25 inch about ten days ago was a benefit to grain that had not previouslt germinated.

Within a radius of fifteen miles north, northwest, and northeast of Williston, less than half the precipitation that occurred at Williston has fallen, and crops are greatly in need of rain.

Maximum temperature, 81 degrees; minimum, 38 degrees; precipitation, 0.74 inch.

UTAH:

Nephi Substation. June 10. The weather of the past week was favorable for field work and crop growth. Winter wheat looks good and has made rapid growth during the past few days. Spring cereals look good, but the stand is probably a little too thin. Alfalfa is in good condition and about fifteen to twenty inches high. Corn has emerged with fair stands.

Practically all the farmers are plowing for fallow on the Levan Ridge. The land is in good condition, although volunteer grain and weeds are a foot high on many fields.

Harney County Branch Experiment Station (Burns). May 31. Good stands have been obtained on practically all crops and all are in good condition. The late season, however, has put them backward a month. Warm weather is needed in order to bring the crops to maturity in season.

Maximum temperature, 77 degrees; minimum, 18 degrees; precipitation for the month of May, 0.80 inch.

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June 22, 1917.

FIELD NOTES.

Farmers' Bulletin 827, entitled Shallu, or "Egyptian Wheat:" A Late-Maturing Variety of Sorghum, by Benton E. Rothgeb, was received from the Government Printing Office on June 20.

Mr. Warburton writes as follows from Sherman, Texas, under date of June 17:

"Grayson County, Texas, is now harvesting an excellent wheat and oat crop, with wheat yields estimated at from 20 to 35 bushels to the acre. The Mediterranean is the principal variety, though it is considerably mixed with other soft red wheats. Most of the comparatively small acreage of fall-sown oats and barley winterkilled, but the large acreage of spring-sown Red Rustproof oats will yield well and should be of good quality. Corn is growing well and is beginning to tassel. Cotton is small and not in the best condition because of cool nights, but stands generally are fair to good and the crop should improve rapidly with the present favorable growing weather."

Mr. Parker left Washington on June 18 to continue investigations in cereal rusts at St. Paul, Minn., Ames, Iowa, and Madison, Wis. He will return about September 15.

Dr. Leighty returned on June 22 from his trip to points in Missouri, Kansas, and Illinois in the interests of wheat investigations.

Attention is called to Memorandum No. 209 from the Office of the Secretary regarding an amendment to the Fiscal Regulations as follows:

Appendix G of the Fiscal Regulations is hereby amended so as to read as follows:

> "Payment of tips, fees, or gratuities to any steward, waiter, porter, or other employee at any hotel, restaurant, cafe, eating house, or to any porter or other employee of any sleeping-car company, corporation, carrier is prohibited by law in the States of Arkansas and Iowa.
>
> "Payment of tips, fees, or gratuities to any person in the employ of any hotel, restaurant, cafe, dining car, railroad company, or sleeping-car company is prohibited by law in the States of South Carolina, Mississippi, and Tennessee.
>
> "Payment of sleeping-car or parlor car porters' tips while enroute to a point in an anti-tipping State will not be allowed."

D. F. Houston.

Secretary.

FIELD NOTES.

VIRGINIA:

Arlington Farm. June 21. The work of harvesting winter barley varieties and selections has been finished. Because of the favorable weather during the past week cereal crops have made excellent growth and are maturing rapidly. A few varieties of winter wheat and oats are practically ripe. Grain sorghums in the environmental experiment were reseeded on June 20. The work of rogueing out foreign material in the cereal field plats is still in progress.

Maximum temperature for the week ending June 20, 90 degrees (June 14); minimum, 50 degrees (June 16); precipitation, 0.21 inch.

TEXAS:

Amarillo Cereal Field Station. June 16. Winter wheats and rye are beginning to ripen. All crops are affected by the continued hot, dry weather. On two days (June 11 and 13) a maximum temperature of 102 degrees was recorded with the humidity as low as 5 and 4 respectively; minimum temperature, 44 degrees (June 14). The nights have been cool. Precipitation, 0.01 inch (June 15); wind velocity, 9.7 miles per hour; evaporation, 3.223 inches. The dry weather is favorable for the destruction of weeds.

WYOMING:

Cheyenne Experiment Farm (Archer). June 16. Spring crops are making rapid growth because of the seasonable weather of the past few days. Winter wheat is making excellent growth. Flax has not yet emerged on account of the hard surface crust. Flax in the date-of-seeding experiment and in the varietal experiment was harrowed several days ago but apparently little benefit has resulted. Buckwheat and rape have also not emerged. These crops will be reseeded at once. Flax on the Dry-Land Agriculture plat was reseeded today.

The work of counting and thinning the nursery plats has been finished. Field plats have been trimmed with a surface cultivator. Very little hand trimming will be required. Field rye is beginning to head.

Seeding of late oats, millet, and forage crops on farms in the vicinity is still in progress. Some fields of rye are almost fully headed and about 2 feet high, while other fields have scarcely begun to head. Winter rye probably will produce a large crop; all spring crops are in fairly good condition.

SOUTH DAKOTA:

Highmore Substation. June 18. Crops are still in good condition but are in need of moisture. Early-seeded barley is beginning to head. Corn is doing better since the temperatures have become higher. Sorghums are emerging. Total precipitation for the month to date, 0.67 inch.

MINNESOTA:

University Farm (St. Paul). June 19. Rust has infected the barberry bushes very heavily but it has not yet spread to the cereals from this source. The epidemic of rust has begun to spread, however, from plants which were inoculated by hand about 3 weeks ago. Flax wilt appeared in the flax plats about 2 weeks ago.

Small grains are generally in good condition, although somewhat late. Strong winds during the past week killed the tips of small grains and did serious damage to some of the truck crops in the vicinity. Rain is needed in the northeastern part of the State and light frosts were reported in the northern section. Winter wheat and barley are just beginning to head.

NORTH DAKOTA:

Dickinson Substation. June 16. Crops are in fairly good condition but need rain and are backward in developing. Winter rye is fully headed and winter wheat will soon begin to head. The trimming and staking of plats is now in progress. Cool, windy weather during most of the past week caused a considerable loss of soil moisture and delayed crop growth. Maximum temperature, 92 degrees (June 9); minimum, 40 degrees; precipitation, 0.01 inch. On June 13 the wind velocity averaged 23.5 miles per hour for 9 hours.

Northern Great Plains Field Station (Mandan). June 18. Flax and small grains are making good growth and now stand about 6 inches high. Winter rye is very

short but is fully headed. The weather during the week has been very warm with high winds. For the 24 hours ending 7:30 a. m. June 14, the wind velocity averaged 14.9 miles per hour; at Bismarck it was reported at 50 miles per hour during the day. Maximum temperature, 93 degrees (June 18); minimum, 41 degrees (June 15); the soil thermograph registered a maximum temperature of 74.5 degrees (June 18); minimum, 61 degrees (June 14); precipitation, trace.

IDAHO:

Aberdeen Substation. June 15. All crops are making good growth since the weather has become warmer. The soil contains abundant moisture. All summer fallowing and trimming of plats has been finished.

Plowing for summer fallow is still in progress on the dry farms in this section. Wire worms are causing a great deal of damage in the winter-wheat fields of the dry farms. A new trouble with alfalfa has just been discovered in the vicinity; it is not known yet whether it is of physiological or pathological origin.

A new county agent has been appointed in Bingham County and is already engaged in making a survey of agriculture and getting in touch with the farmers.

CALIFORNIA:

Plant Introduction Garden. (Chico). June 15. The work of harvesting cereals is in progress. The barleys are all harvested and work will be begun with wheat early next week.

All grains are ripening rapidly because of the very hot weather. Yields of barley throughout the State are above expectation. Wheat harvest has not yet started.

The rice crop is in good condition. The acreage in the State probably will total about 80,000 acres. A large acreage of grain sorghums has been planted this year, the leading variety being Dwarf milo.

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U. S. DEPARTMENT OF AGRICULTURE.

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June 29, 1917.

OFFICE NOTES.

Mr. C. H. Clark returned to Washington on June 16 from Minneapolis, where for six weeks he was engaged in locating available supplies of flaxseed and through elevators and seed houses trying to supply seed flax to every community in need of it. With the cooperation of State experiment stations and extension workers, County agents, State councils of national defense, bankers' associations, farm papers, and commercial publications, an effort was made to arouse interest in the desirability of an increased flax acreage. He reports that climatic conditions were favorable to an increased acreage and the combined efforts of the various agencies undoubtedly had a marked effect in stimulating greater interest in this crop. While it is still early for definite estimates of acreage, reports indicate a considerable increase in North Dakota and Montana and some increase in Minnesota and South Dakota.

Mr. Anthony left Washington on June 23 for Idaho to continue the physiological studies on barley which were carried at the Aberdeen Substation last year.

Mr. Ball returned to Washington on June 24. He attended the meetings of the Third Interstate Cereal Conference at Kansas City, Mo., and presented two papers entitled respectively "Varietal Adaptations" and "Identification and Classification of Wheat Varieties." He then studied the cooperative cereal experiments in progress at Manhattan and Hays, Kans., Amarillo, Tex., Akron, Colo., North Platte, Nebr., and Ames, Ia.

At Hays the rainfall since January 1 is only about one-half of the normal and winter wheat was suffering from lack of moisture. In spite of the long continued drought the best fields on the Station apparently would make 15 to 20 bushels per acre if the dry weather does not continue longer.

In most of the Panhandle, winter wheat is thin and poor suffering from want of moisture. Some fields are being listed and sown in grain sorghums, while others have been pastured. The long drought has seriously affected range conditions and many cattle are being shipped to areas of better grazing.

Northeastern Colorado has had a rainfall above the normal and grazing conditions are good. Winter wheat, of course, was badly injured by severe winter conditions, but spring crops are doing well. This is true also at North Platte and Ames.

Mr. Warburton returned on June 25 from a trip to Kansas, Nebraska, Texas, Louisiana, and Mississippi. At the Interstate Cereal Conference at Kansas City, Mo., he presented a paper on "The Work of the Department Committee on Seed Stocks." On June 14 he attended a meeting at Lincoln, Nebr., called by the State Council of Defense to consider means of assuring an adequate supply of wheat for sowing next fall.

Mr. Warburton reports that in Mississippi, Louisiana and northern Texas early corn has been severely injured by drought. Wheat and oats in the black waxy section of Texas and the comparatively small acreages of oats which survived the winter in Louisiana and Mississippi were harvested and much of the crop was thrashed without any damage from weathering, so that the grain is of excellent quality.

Mr. Chambliss returned on June 27 from a trip to Missouri, Kansas, Illinois, and Tennessee. At Kansas City he attended the meetings of the Third Interstate Cereal Conference.

Mr. E. C. Johnson, Dean of the Extension Division of the Kansas State Agricultural College, and Dr. A. F. Woods, formerly Dean of the College and School of Agriculture and Director of the Agricultural Experiment Station of the University of Minnesota, were visitors at the Office on June 25. Dr. Woods will assume the presidency of the Maryland State College of Agriculture on July 1.

Mr. F. A. Coffman, of Kansas, was appointed Field Assistant on June 1 to assume charge of the cereal investigations at hthe Akron Field Station in place of Mr. Geo. A. McMurdo, who has been on furlough since February 20. Mr. Coffman has been assisting in the field survey of wheat for seed in Kansas and Nebraska.

Messrs. Potter, Kiene, Sieglinger, and Coffman, of this Office, were engaged for some time in the past two weeks in inspecting wheat fields in Kansas with the object of locating stocks of grain suitable for seed. A great deal of wheat seeded in Kansas this year will have to be brought from other localities to the farms where it is to be sown, as winterkilling was very bad. An effort is being made to secure pure and disease-free seed of the Turkey type for sowing this fall. About 20 men were employed in this work, including those from this Office. Messrs. Potter and Coffman are now engaged in similar work in Nebraska, where conditions as regards seed wheat are much worse than in Kansas.

SUMMARY OF THE MORE DEFINITE CONCLUSIONS OF THE THIRD INTERSTATE CEREAL CONFERENCE.

Kansas City, Mo., June 12-14, 1917.

In view of a world shortage of cereal food crops, which is likely to continue for an indefinite period, the Third Interstate Cereal Conference urges the greatest practicable enlargement of wheat acreage and would further make the following recommendations:

(1) To encourage a larger wheat production, the producer should be guaranteed a minimum price, such price to continue at least one year after war is ended.

(2) Early preparation of the land for small grains, where these do not follow cultivated crops, should always be practiced. In the winter wheat area it is very important that this be done immediately after harvest.

(3) Immediate action is required in providing seed for the next crop. At harvest time it is cheapest, and just before harvest seed in large bulk can best be selected. State and federal aid will be given in locating seed in localities of comparative abundance for use in localities where it is sorely needed. Clean seed, as free as possible from diseases, should be selected and arrangements be made for seed treatment.

(4) Varieties of grain best adapted for the locality should always be used. The agricultural colleges and other state agricultural agencies will inform the farmers of the existence of these varieties and how and where to obtain the seed.

(5) Every means should be employed to eliminate weeds, by use of clean seed, crop rotations, early cultivation above mentioned, and any special methods reliably recommended for particular weeds in different localities.

(6) Seed testing for germination can well be further emphasized at this emergency period. The extension service, through county agents, should bring this matter home to every farm.

(7) Seed treatment will largely prevent certain smuts and other diseases of cereals, and, as a real war measure, we are bound to see that it is applied as nearly as possible on every farm, thus increasing our cereal production a hundred million bushels or more, in one season. By field demonstrations the methods can and should be made plain to all concerned.

(8) The possible ravages of Hessian fly, chinch bug, green bug, stored grain and mill products insects, etc., must be kept also in mind and the progress of and means of checking these insects be communicated, so far as possible, in advance of their local occurrence.

(9) As a means of reducing the great loss from rust, it is urged that all common barberry bushes (not the Japanese) and grass weeds, harboring cereal rusts, be eradicated, and that rust-resistant cereal varieties be grown, if otherwise of good quality.

(10) It is a conservative estimate that 20 million bushels of wheat and proportional quantities of other cereals are annually lost by waste in harvesting and thrashing. This waste can and should be, in large measure, easily avoided. A man and team are known to have cleared $27 to $62 a day from cleaning up after thrashers, and, in another instance, last year in Kansas, $500 was gained by a man, with a team and fanning mill, cleaning up after thrashing machine settings, in three weeks' time.

(11) In the western and southwestern plains, grain sorghums should be widely planted. In the northern plains, in the drier districts, flax and, under certain conditions, proso or Russian millet may be used to a similar advantage.

(12) Suitable catch crops (such as cowpeas, soy beans, sorghums, millet, flax, and buckwheat) should be grown on all lands on which staple crops can not be seeded at the proper time or on which they have been destroyed.

(13) The increased use of corn, rice, grain sorghums, proso, barley, rye, beans, cottonseed meal and peanut meal as substitutes for, or in conjunction with, wheat for human food is strongly recommended. Information on this matter can be obtained through the state agricultural colleges and the United States Department of Agriculture.

FIELD CONFERENCES OF THE CEREAL PATHOLOGISTS.

Madison, July 9 to 11, 1917, inclusive.

Monday, July 9: Forenoon, Visit Plant Pathology laboratories and University Grounds.

Afternoon, Inspection of experimental plats.

Evening, Supper, smoker, and round table. "Grass Rusts and Their Role in Cereal Conservation."

Leaders: Dr. J. C. Arthur, Dr. E. C. Stakman.

"The Relation of the Barberry to Rust Epidemics."

Leaders: Dr. E. M. Freeman, Dr. L. E. Melchers.

"State and Federal Legislation Against the Barberry."

Leaders: Prof. L. H. Bolley, Dr. L. R. Jones

Tuesday, July 10: Forenoon & Afternoon, Automobile tour for study of cereal diseases at Agronomy farm, Stoughton, Janesville, Jefferson.

Evening, Supper, smoker with round table. "State and Federal Cooperation in Fighting Cereal Diseases during our Food Emergency."

Leaders: Dr. H. B. Humphrey, Dr. F. L. Stevens, Dr. F. D. Kern

"Imperfect Fungi Causing Cereal Diseases with Special Reference to the Helminthosporiums."

Leaders Dr. A. G. Johnson
Prof. L. E. Melchers

"Recent Investigations on Yellow Stripe Rust."

Leaders Dr. C. W. Hungerford
Dr. F. D. Heald

Wednesday, July 11: Forenoon and Afternoon, Field trip for the continued study of cereal diseases at Beaver Dam and other points of interest.

Dr. A. G. Johnson, Chairman of Committee on local Arrangements.

Headquarters, University Club, Madison, Wis.

FIELD NOTES.

TENNESSEE:

Agricultural Experiment Station (Knoxville). June 20. Wheat varieties in the rust nursery were so heavily infected with stem rust that the grain is very badly shriveled.

In many fields stem rust has not appeared at all and it has not been severe in any place noted. Leaf rust has been exceedingly severe and undoubtedly has been the direct cause of reduced yields in many instances.

Wheat is now being harvested and yields are very low throughout the State. The joint worm has done considerable damage in many sections of eastern Tennessee. Severe winter injury also has reduced the yields.

WYOMING:

Cheyenne Experiment Farm (Archer). June 23. Varieties of flax, buckwheat, and rape reseeded on June 16 have emerged. Corn, sorghum, and millet, Sudan grass in a method-of-seeding experiment, and beans also have emerged with good stands. All crops are responding to the favorable growing conditions. Winter wheat varieties are going into the boot stage. Field rye is about 3 feet high and almost fully headed.

Nitrate and phosphate were added to the Marquis wheat in the cereal fertilizer experiment on June 22. It has not been possible to get potash for this purpose because of the lack of supply.

Trees were severely injured during the past winter. Conifers winterkilled almost completely; about two-thirds of the cottonwood trees killed back to the roots; the tips of the ash and willows killed back considerably except where sheltered by snow drifts; elms were not injured much.

Maximum temperature for the past week, 90 degrees (June 23); minimum, 41 degrees (June 20); precipitation, 0.05 inch.

Mr. O. J. Grace, traveling field assistant in charge of central group of Dry-Land Agriculture field stations, inspected the Dry-Land Agriculture project on June 13 and 14.

SOUTH DAKOTA:

Bellefourche Experiment Farm (Newell). June 25. Winter rye is fully headed and in bloom. Other grains have hardly begun to head. All seeding has been finished, including proso, flax, and buckwheat. The plats have been trimmed and the roads plowed. Irrigation of the grain varieties was begun today.

Grain crops in the vicinity look good, although they are very late. The weather for the past three weeks has been very dry with only occasional and very light showers.

Highmore Substation. June 25. The weather of the past week has been favorable for crop growth. Early-seeded oats, barley, and emmer are headed. Flax seeded early is just beginning to bloom and early-sown wheats are in the boot. Corn, sorghum, millet, and proso are making good growth since the beginning of warmer weather. The second crop of alfalfa is making rapid growth. During the past week temperatures have been nearly normal; precipitation, 0.98 inch (June 21, 22).

NORTH DAKOTA:

Dickinson Substation. June 23. The cereal plats have been trimmed and staked and the alleys cultivated. Winter wheat and Prelude spring wheat are beginning to head. The condition of cereal crops has been benefited by the precipitation of 0.80 of an inch during the week. Maximum temperature, 91 degrees (June 18); minimum, 34 degrees (June 21).

The annual Farmers' Picnic was held at the Substation on June 18 and was attended by about 600 people. Addresses were made by Director Thomas Cooper of the agricultural experiment station, Prof. J. H. Shepperd, Vice Director, Mr. Alfred Wenz, of the staff of the Dakota Farmer, Mr. John Thysell, superintendent of the Substation, and Mr. R. W. Smith. The Rev. Mr. Dignam spoke on the work of the Red Cross.

Mr. A. J. Ogaard, superintendent of the Hettinger Substation, was a visitor on June 22.

Northern Great Plains Field Station (Mandan). June 25. Flax has been making good growth and in the early-seeded plats has begun to bloom. Oats are heading, although they are only 8 to 10 inches high, and wheat is beginning to head, although still short. Rain is very much needed.

The weather of the past week has been windy with slight showers nearly every day. Maximum temperature, 81 degrees (June 25); minimum, 36 degrees (June 21); precipitation, 0.20 of an inch.

Mr. Stoa visited the Station today.

Williston Substation. June 23. Grain is very short and is heading about a week earlier than usual. All of the barleys, the early oats, and Marquis and other similar wheat varieties are heading. Prelude wheat is nearly in full head. The precipitation of 0.80 of an inch on June 21 was of great benefit to small grains.

Early-sown grain throughout this section looks good, with the exception that it is short for this time of the year, but the greater number of fields that have been inspected are in bad condition because of the very uneven germination, which will result in uneven ripening. Maximum temperature, 92 degrees; minimum, 35 degrees; precipitation, 0.80 of an inch.

Mr. John M. Stephens, traveling field assistant in charge of northern group of Dry-Land Agriculture field stations, was a visitor on June 22.

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1917.

July 6, 1917.

OFFICE NOTES.

The unused transportation requests issued for the fiscal year, 1917, should be returned to this office immediately.

Mr. Rothgeb returned to Washington on June 30. He attended the meetings of the Third Interstate Cereal Conference at Kansas City, Mo., where he presented a paper entitled "Grain Sorghum Experiments in the Panhandle of Texas." He then studied the grain-sorghum experiments in progress at Big Springs, Dalhart, and Amarillo, Texas; Lawton and Woodward, Okla; and Tucumcari, N. Mex.

At Big Springs the rainfall since January has been considerably below normal and but little sorghum has been planted, due to the dryness of the soil. Pastures are dry and cattle are being shipped to other sections for grazing. Poor stands of the sorghums were obtained at Dalhart, which made replanting necessary. The crop at Amarillo is a little late but nearly all plats have good stands and the plants are growing well.

Chinch bugs are numerous at Lawton and some of the plats have been injured by this pest. The crops are in good condition at Woodward and farther advanced than at any of the other stations. The crops on about 75 plats at the Tucumcari station were partially or totally destroyed by soil blowing; those on the remaining plats making good growth.

Mr. Carleton returned to the office on July 5 from a 3-weeks' trip to Kansas, Texas, Utah, and other Western States. He attended the Interstate Cereal Con-

ference at Kansas City and presided at some of the sessions. In company with Mr. J. W. Jones, of the Nephi Substation, he investigated the possibilities of grain production in San Juan County, Utah, and Montezuma County, Colorado.

Dr. Harlan left on July 5 to conduct investigations relating to barley improvement, production, and utilization in Illinois, Nebraska, Kansas, Wyoming, Idaho, Montana, Minnesota, South Dakota, and Wisconsin.

Mr. Chambliss left on July 6 for San Juan, Ponce, and other points in Porto Rico to investigate the possibilities of rice growing in that island, and advise with experiment station officials regarding the development of the rice industry, particularly as to the choice of varieties.

Attention is called to Memorandum No. 211 of the Office of the Secretary, dated June 21, 1917, concerning the preparation and dispatch of telegrams:

"In memorandum No. 181 of the Office of the Secretary, entitled 'Preparation and Dispatch of Telegrams' issued December 13, 1916, attention was directed to paragraph 43 of the Fiscal Regulations of the Department, reading as follows:

> 'The telegraph must be used sparingly, and only when the delay in using the mail would be injurious to the public interests. Care should be taken to omit all unnecessary words. In a message from one employee to another, titles should not be used, and in a great many cases the names of the parties in both address and signature may be limited to single words. Numbers should be expressed in words, not in figures; ordinal numbers should not be abbreviated.'

and also to the fact that careful inspection of outgoing telegrams indicated clearly that sufficient care was not being taken to eliminate unnecessary words. Chiefs of Bureaus, Divisions, and Offices were requested to give the matter immediate and careful consideration and to take such action as might be necessary to insure the careful and economical preparation of all telegrams. The following statements also appeared:

> 'Telegrams should be employed only when it is absolutely clear that letters will not serve the purpose. The use of straight telegrams should be restricted and advantage taken whenever possible of the day or night letter rates.' (The words 'day or night letter rates' should be changed to read 'night rate.')

The above statements, with the other points touched upon in memorandum No. 181, cover generally the whole question of the use of telegrams by the Department, and outline the procedure to be followed.

Further investigation indicates that the instructions given in memorandum 181 have not been followed. Telegrams frequently are presented for my signature where it is quite clear that letters would serve the purpose. This is an important matter, and Chiefs of Bureaus, Divisions, and Offices are requested to read memorandum 181 carefully, to bring it specifically to the attention of the chiefs of offices, and to direct them to see that it reaches every employee of the Department having anything to do with the preparation of correspondence.

* * * * The cooperation of all employees is expected in order that the Department may handle its telegraph work in a business-like manner.

* * * *

D. F. Houston,

Secretary."

FIELD NOTES.

VIRGINIA:

Arlington Farm. July 6. Thrashing winter barley in field plats has been finished. Harvesting winter wheat and oats in both field plats and nursery is under way. Because of recent heavy storms winter wheat has lodged considerably, thus making the work of harvesting the crop quite difficult. Maximum temperature for the two weeks ending July 4, 98 degrees (June 27); minimum, 57 degrees (June 30); precipitation, 2.54 inches. Total precipitation for the month of June, 4.93 inches.

GEORGIA:

State College of Agriculture (Athens). July 3. The thrashing of wheat and rye is now under way. Good yields are being obtained.

Tifton Substation. Thrashing has been completed, with fair yields. The leading varieties of wheat were Mammoth Red, which yielded 15.8 bushels, and Fulcaster, 14.2 bushels. The leading varieties of oats were Appler, with a yield of 40.6 bushels; Hundred Bushel, 37.1 bushels; and Bancroft, 34.3 bushels.

Quitman Substation. Thrashing has been completed. The yields of all varieties of oats were very low, while all wheats were practically failures.

WYOMING:

Cheyenne Experiment Farm (Archer). June 30. Winter wheat is from 12 to 15 inches high, and all varieties except Buffum No. 17 have begun heading. Rye is fully headed and is flowering. Blackhull barley, C. I. No. 878, has begun to head, and early-sown oats are in the boot. Proso and sweet clover in nursery rows failed to emerge and have been resown. Maximum temperature, 92 degrees (June 30); minimum, 46 degrees (June 27); precipitation, 0.28 inch.

SOUTH DAKOTA:

Belle Fourche Experiment Farm (Newell). June 30. The soil on the dry-land plats is cracked and very dry and crops will be injured if rain does not fall soon. Early varieties of spring wheat, oats, and barley are heading and winter wheat is beginning to head. Flax is beginning to bloom.

All grains below the ditch were irrigated. Hoeing of the alleys between the plats was begun and part of the nursery was staked.

Agricultural Experiment Station (Brookings) June 30. Crop conditions are very favorable. Some of the varieties of spring common wheat are rusting slightly, but there is no evidence of rust on any of the durums. Sixty-Day oats and some of the earlier varieties of barley have headed. During the week ending July 7 Mr. Champlin will inspect all of the experiment station farms. A group meeting of the Experiment Association will be held at each farm.

NORTH DAKOTA:

Agricultural Experiment Station (Fargo). July 2. Barley and early oats have headed and wheat will begin heading within a few days. Early-sown flax is blossoming.

The month of June was cold and dry. The mean temperature for the month was 61.2 degrees, compared with a 35-year normal of 64.1 degrees. The rainfall during June was 1.5 inches; normal, 4.12 inches. The rainfall from April 1 to June 30 was 3.68 inches; average rainfall for these three months, 9.23 inches. In spite of the continued dry weather crops in the Red River Valley are still promising.

On a recent trip to Langdon and Mandan it was noted that the crops need rain badly. Grain is beginning to head, but will be short. In the northern part of the State winter rye will probably make less than half a crop. Flax is making fair growth, but germination was uneven because of insufficient moisture.

Dickinson Substation. June 30. Cereal crops have made good growth during the week. Early oats and barley are beginning to head. Because of the continued dry weather the straw of all the cereals will be short. Alfalfa hay now being cut will make only half a crop.

The cereal nursery was cultivated and hoed during the week. Crosses are being made between the different varieties of winter wheat.

The week has been windy, drying up the moisture that fell in light showers. Maximum temperature, 94 degrees (June 29); minimum, 44 degrees (June 24); precipitation, 0.24 inch. Total precipitation for the month was 2.42 inches, 0.73 inch below normal. The rainfall for May was 2.26 inches below normal. Rain is badly needed now.

Northern Great Plains Field Station (Mandan). July 2. Flax on some of the plats is almost in full bloom and looks good. Sixty-Day oats and early varieties of barley are fully headed and Marquis wheat is beginning to head.

A local shower of 0.9 inch on June 30 was of great benefit to crops on the station and in the immediate vicinity. Maximum temperature for the week, 88 degrees (June 30); minimum, 42 degrees (July 2). Maximum temperature recorded by the soil thermograph, 77 degrees (June 28); minimum, 60 degrees (July 2).

Williston Substation. June 30. The weather continues dry and small grains are unusually short. No general rain fell during May and June, though there were some local showers. Some sections have had very little precipitation. Where the precipitation has been heavier, the small grains are looking fairly good; elsewhere, crops are in bad condition. On June 24 a local shower of 0.6 inch fell in the vicinity of Williston. It was accompanied by considerable hail, but no damage was done, as there was no wind. This shower fell on only a narrow strip, and 10 miles north of Williston there was no rain.

Some fields of grain in this section may make an average crop, while others at present promise little or nothing. Wheat looks better than oats and barley, probably because it was seeded first. The early-sown flax looks good. The later-sown flax did not come up until the first week in June, when light rains fell, and germination was then quite uniform. Flax seeding has been continued through the month of June.

Grain plats on the station look good except that the straw is short. Many of the varieties are now in full head. Corn and potatoes are in good condition.

Maximum temperature for the week, 85 degrees; minimum, 45 degrees; precipitation, 0.70 inch. Precipitation for May, 0.08 inch; normal, 2.17 inches. Precipitation in June, 2.53 inches; normal 3.52 inches.

CALIFORNIA:

Biggs Rice Field Station. June 15. Rice on the station is in good condition and is growing rapidly. Stands are unusually good. Half of the land on which experiments to eradicate water grass were conducted last season has been sown to rice. This land is much cleaner than was expected, as very little water grass has appeared. Many farmers are visiting the station to inspect this experiment, as it was the only one in this section that gave good results.

Rice was sown much earlier than usual in the Sacramento Valley, but, as the weather has been cool, the condition of the crop at present is about normal. The temperature today is 103 degrees, this being the first hot spell of the season.

OREGON:

Eastern Oregon Dry-Farming Substation (Moro). May 24. The following is a summary, by crops, of the cropped area on the Substation this year:

	Number of Varieties.	Area.
Winter wheat.		
Field experiments:		
Varietal	25	70 1/20 acres
Rate and date	1	68 " "
Spacing and depth	1	16 " "
Environmental	1	6 " "
Increase	4	15 acres
Nursery experiments:		
Classification	903	903 head rows
Varietal	19	456 rod rows
Spacing	1	32 1/160 acres
Increase, pure lines	130	390 rod rows
Second-generation hybrids	75	
Spring wheat.		
Field experiments:		
Varietal	24	40 1/20 acres
Rate and date	3	40 " "
Increase	6	12 acres
Fertilizer	1	3 1/10 acres
Nursery experiments:		
Classification	554	554 head rows
Pure lines	483	483 head rows
Increase, pure lines	17	17 8-rod rows
Varietal	329	684 rod rows
Spacing	1	32 1/160 acres
Second-generation hybrids	30	
Winter emmer and spelt.		
Varietal experiments	3	6 1/20 acres
Increase, pure lines	1	2 " "
Nursery experiments	7	7 head rows
Winter rye.		
Varietal experiments	4	8 1/20 acres
Increase, pure lines	1	5 8-rod rows
Increase	2	5 acres
Spring oats.		
Varietal experiments	16	32 1/20 acres
Rate of sowing experiments	2	40 " "
Nursery experiments	19	192 rod rows
Increase	4	10 acres

	Number of varieties.	Area.
Winter barley.		
Varietal experiments (all winterkilled)		
Spring barley.		
Varietal experiments	19	38 1/20 acres
Rate of sowing experiments	2	40 " "
Nursery experiments	136	550 rod rows
Increase	4	10 acres
Field peas.		
Varietal experiments	18	60 1/20 acres
Rate, date and depth experiments	1	60 " "
Nursery experiments	6	144 rod rows
Corn.		
Varietal experiments	50	150 8-rod rows
Rate and spacing experiments	1	5 acres
Potatoes.		
Varietal experiments	10	20 8-rod rows
Increase	6	2 acres
Beans.		
Varietal experiments	10	10 1/20 acres
Increase	5	2 acres
Soybeans and cow peas.		
Varietal experiments	13	8 1/20 acres
Kale and rape.		
Varietal experiments	2	4 " "
Alfalfa and sweet clover.		
Varietal experiments	6	10 " "
Methods of planting	4	5 "
Increase	3	3 "
Vetch.		
Varietal experiments	9	14 1/20 "
Grasses.		
Varietal experiments	7	5 1/10 "
Increase	2	2 "

	Number of varieties.	Area.
Oil and drug plants.		
Varietal experiments	6	6 1/20 acres
Cereal disease experiments	85	85 head rows
Rotation experiments.		160 1/10 acres
Tillage experiments (one-half fallow)		140 " "
Grain hay and pasture		15 acres
Total area in crops		156 acres
Total fallowed area		54 acres

WASHINGTON:

Adams Branch Experiment Station (Lind). June 19. The season generally has been favorable for cereal crops. The weather has been cool, with more than average rainfall during the spring months. Rainfall since January 1 is below the average, having been as follows: January, none; February, 0.45 inch; March, 0.47 inch; April, 2.07 inches; May, 1.77 inches; and June to date, 0.38 inch. The total rainfall since January 1 is 5.14 inches, and since April 1, 4.22 inches. The mean temperatures for the same period have been lower than the average, the mean maximum during May being 68.3 degrees and the mean minimum, 42.6 degrees. The first ten days in June were also comparatively cool, but the mean maximum during the week ending June 17 was 81.5 degrees. If this hot weather continues, the crops may be injured.

All winter wheat on the station and in the surrounding country winterkilled. Spring wheat is beginning to head on the lighter soils to the south and west of Lind.

Field peas have made good growth until the past week, during which they were injured by the warm weather. Other crops have not done well. The cool, damp weather has made the control of weeds in growing crops difficult, and there is more mustard than usual in spring grain. Wire worms have thinned the stands in some grain fields, including those on the station.

More seed has been sown than in previous years, many sowing as much as 1½ bushels of wheat to the acre. The increase of weed and insect pests make heavier seeding desirable, as farmers prefer thick stands of wheat to thin, weedy stands. Many also seed heavily with the expectation that cultivation to kill weeds will reduce the stands to the proper thickness.

Seeding was unusually late and was not completed until about May 5. The greater part of the seeding was done before April 15, however, as compared with March 10 in normal seasons. Plowing for summer fallow has also been late and is not yet finished. As a result summer-fallow land is not in as good condition as usual.

A No. 2 Ellis-Keystone thrasher and 6-h. p. I. H. C. Mogul engine have been ordered.

June 25. Wheat is heading, with prospects of a good crop, though the straw is short. Labor is scarce and wages are high, ranging from $45 to $60 a month with board. The weather has been cooler, following a light rain. The average maximum for the past week is 79 degrees; minimum, 43.6 degrees. The absolute maximum for the week was 85 degrees; minimum, 38 degrees; precipitation 0.09 inch.

Following is a summary by crops of the experiments on the station this year:

Varietal experiments:	Varieties.	Plats.
Spring wheat	27	69
Winter and spring rye	9	27
Spring emmer	1	3
Spring oats	12	20
Spring barley	7	16
Proso and millet	3	5
Flax	4	8
Rate and depth of seeding experiments:		
Spring wheat	1	16
	63	164

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July 13, 1917.

OFFICE NOTES.

Mr. Chas. H. Clark left Washington for Mandan, N. Dak., on July 8 to harvest the flax selections on the Northern Great Plains Field Station. Mr. Clark will return about Sept. 1.

Mr. Stanton left Washington on July 10 for Ames, Iowa, where he will assist with the note taking and in the harvesting of oat selections. En route he will visit the Ohio, Indiana, and Illinois experiment stations.

Mr. Carleton left on July 8 to attend the annual field meeting of the cereal pathologists at Madison, Wis., from July 9 to 11, inclusive.

FIELD NOTES.

TEXAS:

Amarillo Cereal Field Station. July 7. Winter grains, with the exception of those in the nursery rows, have all been harvested. The spring grains still have a ragged appearance and are ripening unevenly. It will be hardly possible to harvest some of the wheat and oats. Seed will have to be gathered by hand from several of the oat plats in order to continue the varieties next year. The grain sorghums and broomcorn are growing and look thrifty in spite of the dry weather. The leaves curl somewhat during the day but are fresh again by the following morning.

Maximum temperature for the past week, 100 degrees (July 5); minimum, 57 degrees (July 4); wind velocity, 10.5 miles per hour; precipitation, 0.66 inch; evaporation, 2.9 inches; precipitation in the month of June, 0.83 inch, which is the lowest rainfall in June since 1911.

WYOMING:

Cheyenne Experiment Farm (Archer). July 7. So far crops have not been affected by the dry weather, although the soil moisture is rapidly disappearing. A number of varieties of barley, Prelude wheat (C. I. No. 4323), Preston "Spring Turkey" wheat in the April 16 date-of-seeding experiment, and Kherson oats in the April 16 and May 1 date-of-seeding experiments have begun to head. Flax in the April 6 date-of-seeding experiment has begun to blossom. Prosos reseeded in the nursery on June 25 have emerged.

Alfalfa varieties in rows were harvested on June 29. Yields from 1350 to 2000 pounds per acre were obtained. Grimm is the leading variety. Yields per acre of alfalfa and brome grass sown broadcast in the Dry-Land Agriculture plats were as follows: Alfalfa 2 years old, 1,050 pounds; 3 years old, 1,600 pounds; brome grass, 2 years old, 2,450 pounds; 3 years old, 3,100 pounds.

Mr. Carleton visited the Farm on July 2.

Maximum temperature for the past week, 90 degrees (July 7); minimum, 41 degrees (July 1); precipitation, 0.09 inch.

SOUTH DAKOTA:

Bellefourche Experiment Farm (Newell). July 9. Crops on the dry land are badly in need of rain but are still growing. Early grains are fully headed and flax is practically in full bloom. Durum wheats are just beginning to bloom.

On a trip through the northern half of South Dakota during the past week it was observed that crops are beginning to need moisture in the western part of the State, with the exception of the Black Hills. Rain in the near future would prevent injury from drought, however. Crops are in excellent condition in the central part of the State, but more rain will be needed to mature those sown late. There has been ample rainfall in the eastern section of South Dakota and all crops look very good. Many of the grain fields are rather badly infested with mustard. Around the Black Hills crops are promising although late. Conditions are favorable in the State as a whole.

The stages of growth of the various field crops are about as follows:

Winter rye is beginning to turn and the kernels are about formed. Winter wheat is fully headed. Marquis spring wheat is partly or fully headed and Preston and durum wheats are just beginning to head, while Fife and Bluestem wheats have not yet begun. Sixty Day oats are fully headed but later oats have not begun to head. Six-rowed barley is fully headed in most fields. Corn is a foot tall or less, depending on the time of planting.

Highmore Substation. July 9. While on an automobile trip through the western part of South Dakota Mr. Morrison observed a large acreage of Turkey winter wheat that has survived the winter in excellent condition and probably will produce a good crop. In Haakon County alone it is estimated that there will be from 5,000 to 10,000 bushels of good Turkey winter wheat for seed purposes.

The annual "Station Day" was held at the Substation on July 3. There was a good attendance and all seemed very much interested in the inspection of the field experiments.

Early-sown small grain and winter grains are still promising although the lack of moisture is getting serious. Some late-sown small grain is being cut for hay or used for pasture. Corn is doing well. Kaoliang is making good growth but stands are poor because of the cold and backward season.

Temperatures have been very high during the past few days. A precipitation of 0.38 inch has been recorded so far in July.

NORTH DAKOTA:

Agricultural Experiment Station (Fargo). July 9. The drought still continues. All small grains are heading rapidly. Corn is very short. Maximum temperature for the past week, 86 degrees; minimum, 42 degrees; precipitation, 0.28 inch.

Dickinson Substation. July 7. During the past week the weather has been favorable to crop growth, with the exception of drying winds the first part of the week. A rainfall of 0.70 inch on July 4 was of benefit especially to flax and other late-sown crops. Early wheat and oats which are now heading are in need of more rain to insure a fair crop. Many localities report showers of less than an inch. It is probable that not more than half a crop of wheat can be expected from this part of the State.

Spring wheat in the varietal plats looks fairly good. All varieties are beginning to head with the exception of the Bluestem and dommon Fife varieties. Prelude and the winter-wheat varieties are fully headed. The latter probably will yield well, having come through the winter in standing corn stalks with about 75 per cent survival. Crosses have been made among the 7 varieties, totaling 300 crossed spikelets during the week.

Corn has been backward but is now making rapid growth. The first cutting of alfalfa hay is the lightest in years.

Northern Great Plains Field Station (Mandan). July 9. Flax plats are in full bloom, and the small grains are fully headed. Sixty Day oats, although still very short, are beginning to ripen. Weeds have been unusually troublesome since the recent rains.

Maximum temperature for the past week, 96 degrees (July 8); minimum, 40 degrees (July 3); precipitation, 0.52 inch. The soil thermograph registered a maximum temperature of 82 degrees (July 8); minimum, 60 degrees (July 2 and 3). The weather of the past week has been the warmest of the summer, but the daily showers have improved the condition of the crops.

Williston Substation. July 7. Most of the small grains are fully headed. Grain on the continuously cropped plats is short, while that on fallow and cultivated ground probably will be tall enough to cut with a binder.

In the vicinity of the Substation early-seeded wheat is heading short in most cases, but many of the later seeded fields which are not yet heading probably will give good yields provided there is sufficient moisture. Flax looks good in most cases.

Maximum temperature for the week, 98 degrees; minimum, 45 degrees; precipitation, 0.11 inch.

MONTANA:

Judith Basin Substation (Moccasin). July 6. All crops have made rapid growth during the last ten days but are still rather short. The early varieties of barley and Prelude spring wheat are just beginning to emerge from the boot stage. Flax has been making good growth during the last week and will soon be in blossom. As a result of the slight precipitation during June crops are beginning to show the need of rain. Alfalfa was the first to show the effects of the dry weather. It started to turn yellow several days ago and is being cut as rapidly as possible. Grains on fallow are not suffering much from the drought as yet but will not be able to hold out for very many more days. Since June 11 there has been no precipitation of value. Precipitation for the month of June, 1.81 inches, which is 1.4 inches less than normal.

UTAH:

Nephi Substation. July 2. Winter wheat is almost fully headed. On fallow land winter wheat is in fine condition; on land that was cropped in 1916 wheat is drying quite badly. Spring cereals do not look so good and are being affected by the hot, dry weather. Some varieties are heading very short.

Intertilled crops look good. Peas are in bloom.

The second series of soil samples were taken during the last two weeks in June. They show considerable available moisture in the 5-foot and 6-foot sections.

Plowing for fallow on the Levan ridge is not yet finished. The weather is very hot and dry.

OREGON:

Eastern Oregon Dry-Farming Substation (Moro). June 30. All winter wheat varieties are now fully headed. Winter rye is nearly ripe and some spring barley is beginning to ripen. Some of the early spring wheat varieties are also fully headed. With the exception of rye, the first grains that headed were Beldi and Mariout spring barleys.

The total precipitation for the month of June was 0.05 inch, the lowest on record. The 12-year normal for June is 1 inch. Temperatures have been about normal, but crops are suffering for lack of moisture. Most grain crops on ground cropped to grain last year are burned beyond recovery. Grain on ground fallowed last year will make a fair crop but would be greatly benefited by a good rain. The total precipitation since Sept. 1, 1916, is only 9 inches.

June 23 was Wasco County Day at the Substation. Eighty-five farmers, who drove from 30 to 50 miles in automobiles, inspected the Substation.

Harney County Branch Experiment Station (Burns). July 2. Crops made excellent progress during June and at present look better than the average. The early varieties of cereals are heading. Rain will be needed soon, however, as without it crops can hardly be expected to produce normal yields. The total precipitation since last September is but 4.7 inches. Crops on land not previously fallowed or otherwise poorly prepared, both on the plats at the Station and in neighboring fields, are showing the need of moisture.

Maximum temperature for the month of June, 97 degrees; minimum, 20 degrees; precipitation, 0.33 inch.

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July 20, 1917.

OFFICE NOTES.

Mr. Warburton left on July 14 for Ames, Ia., where he will take notes on oat varieties and selections and study varieties in the classification nursery. He will be at Ames about two weeks and will then go to Aberdeen, Idaho, for similar work.

Mr. Carleton returned on July 14 from his trip to Madison, Wis., where he attended the Field Conference of Cereal Pathologists.

Mr. Tisdale arrived in Washington on July 16 to confer with members of the Office regarding his work. He left again on the 19th to visit points in the South for the purpose of studying the Physoderma disease of corn.

Mr. Potter returned to Washington on July 16 from a trip to Kansas, Nebraska, Minnesota, Illinois, Michigan, and Wisconsin in the interest of cereal disease work. He also attended the Third Interstate Cereal Conference at Kansas City, Mo., in June, and, with Mr. Coffman, of the Akron Field Station, he took part in the Kansas and Nebraska State cereal survey.

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Mr. Carleton left on July/for Louisiana to investigate conditions connected with rice growing.

Dr. Humphrey returned on July 18 from a trip to southern and western points in connection with cereal disease investigations.

Mr. Ball left Washington on July 18 for a field trip of 6 or 7 weeks' duration for the purpose of studying wheat experiments on western field stations and the classification nurseries at Cornell University, Ithaca, N. Y.; Moro Substation, Moro, Oreg.; and Williston Substation, Williston, N. Dak. He also will attend the second annual conference of western agronomic workers at Pullman, Wash., and Moscow, Idaho, on July 31 to August 2, inclusive.

While at Cornell University he will give an illustrated lecture on wheat production in the United States before the students of the summer school. This lecture will be repeated at Chicago University if he passes through Chicago on a day when school is in session.

Wheat in California, Oregon and Washington.

Under date of July 1, Mr. J. Allen Clark writes from Moro, Oregon, as follows:

"While the wheat acreage in California is small, the condition of the crop is very good in most parts of the State. In southern California, Sonora is the variety most commonly grown. Early Baart is supplanting it in some sections. Fretes is grown to a small

extent in the Antelope Valley. Turkey wheat has been tried but with little success in this section. North of Fresno in the San Joaquin Valley, White Australian (Pacific Bluestem) is the principal variety. A small acreage of Little Club also is grown. The same varieties extend northward through the Sacramento Valley. In both these large valleys the wheat crop is unusually good. A 360-acre field of wheat at Winters, called "Pilcrow Enormous," was identified as California Gem, which is similar to or identical with Dicklow.

The wheat crop of Siskiyou County, in northern California, is late. Very little winter wheat was seeded last fall because of drought. The spring wheat is late and suffering from drought. White Winter and Fortyfold are the winter wheats in this section, and Pacific Bluestem is the spring variety.

The wheat crop in the Willamette Valley of Oregon is very good but late. There is a large acreage of spring wheat. The leading winter wheats are White Winter, Fortyfold, Kinney, and Huston. Pacific Bluestem is grown both as a spring and winter wheat, as is also Little Club.

A small but very good crop of wheat was observed in the Puget Sound district north of Seattle. A 20-acre field of "Titanic" (poulard) was inspected in that section.

The wheat crop of the Columbia Basin of Oregon and Washington is being caught by drought and a short crop may result."

On July 17 Mr. Stanton writes from Ames, Ia., as follows:

"Oats in the varietal plats of the Agronomy Farm look promising but will be late in maturing. Some of the strains of Sixty Day and other early varieties will be ready for harvest by the end of the week.

The stand of wheat in most of the varieties has been reduced more than 50 per cent by winterkilling. Wheat is also very late in maturing. Barley is unusually good in the varietal experiments.

Through central Ohio, Indiana, and Illinois oats will be late in maturing. They are in excellent condition, however, and prospects are good for a big crop. Winter wheat in Ohio is nearly matured and the indications are that the yield will be fair. In Indiana and Illinois wheat is also very late and the yield will be poor because of severe winterkilling. Practically no harvested fields of either crop were observed in this section.

In general corn is very small as the result of the rather cold, wet weather of the past few weeks. In Iowa corn is farther advanced, however, than in central Ohio, Indiana, and Illinois. It is evident that weather conditions from now on will have to be very favorable if a satisfactory crop is to be expected from a large number of fields. Apparently an excellent hay crop is being harvested in most sections of the corn belt.

Mr. Chas. H. Clark writes from Mandan, N. Dak., that the crop prospects in North Dakota are not generally bright. Flax probably has the best chance of making a good crop of any of the small grains, as the recent rains will be of most benefit to it.

At the Northern Great Plains Field Station flax will probably make fair yields. That in the field plats has about finished blooming, while that in the nursery is later. Because of uneven germination the plats have a patchy appearance and ripening will consequently be uneven.

Appointments.

Attention is called to the necessity for giving name in full when requesting appointments. Failure to do so has in a number of instances necessitated the spending of considerable time by employees in various offices, as inaccuracies are sometimes brought to light only upon receipt by the appointment clerk of the executed papers. These papers call upon the appointee for his name in full and it is then, for the first time, in many instances, that such is known to this Office. It is particularly desirable to exercise care in the matter at this time of public stress when the Department work has increased and the clerical force has, in many cases, been depleted by transfers, furloughs, and resignations.

The following is a list of those who were authorized to attend the field meetings of the cereal pathologists at Madison, Wis., July 9 to 11, inclusive: Olaf S. Aamodt, H. D. Barker, M. A. Carleton, A. M. Christensen, Chas. Drechsler, H. B. Humphrey, C. W. Hungerford, M. N. Levine, L. E. Melchers, J. H. Parker, F. J. Piemeisel, A. A. Potter, and Chas. Reddy.

FIELD NOTES.

VIRGINIA:

Arlington Farm. July 20. All cereal crops have been harvested and thrashing is well under way. Because of continued stormy weather much of the grain has germinated in the shock and thrashing has been greatly delayed.

Maximum temperature for the two weeks ending July 18, 91 degrees (July 16); minimum, 63 degrees (July 11); precipitation, 2.9 inches; precipitation for the period from July 1 to 18, inclusive, 5.02 inches.

NORTH DAKOTA:

Dickinson Substation. July 14. The continuous hot, dry weather has caused the condition of crops to become more serious. Corn and flax still look good although late-sown flax is very small. These crops would still be greatly benefited by rain. Spring wheat, oats, and barley will soon be fully headed and are too nearly mature to recover from the effects of the drought. Much of the barley and oats is so short that it will be difficult to bind. Winter rye is beginning to ripen. Durum wheat still looks fairly good.

The hay crop is very light, and some farmers are planning to mow barley for hay in order to save it.

Maximum temperature for the past week, 95 degrees (July 9); minimum, 45 degrees (July 13); precipitation, 0.02 inch.

Williston Substation. July 14. Early varieties of wheat and oats and most of the barley will soon be ripe. Wheat is from 20 to 30 inches high; oats 25 to 30 inches; and barley 18 to 24 inches. This includes varieties on corn ground. Small grains on potato ground are much shorter. Some of the plats on continuous cropped ground will have to be cut with a mower. Small grains on corn ground look good but not so good as on fallow ground.

East of Williston, in the vicinity of Ray and Minot, small grains are reported to be in worse condition than in the section north and west of Williston. It is reported that many farmers near Minot have plowed their wheat fields.

In the vicinity of Williston small grains may produce half of a normal yield. Many fields of wheat, oats, and barley may produce only enough seed to be used for planting. Hay will be very scarce. Corn and potatoes are in good condition.

The weather of the past week was hot and dry and the precipitation only 0.08 inch.

IDAHO:

Aberdeen Substation. July 12. Crops on irrigated land that has sufficient water are growing rapidly. Grains in the varietal experiments and in the nursery, as well as peas and sugar beets for seed, are in excellent condition and the indications are that the yield and general quality will be better than ever before recorded.

Dry-land crops in the vicinity are burning up and if the present high temperatures continue hardly more than a third of a crop can be harvested. Winter wheats are injured considerably more than spring wheats. During the past week temperatures have ranged from 90 to 97 degrees with an average of 95 degrees.

Mr. J. Allen Clark, of the Office, and Prof. G. S. Ray, agronomist at the University of Idaho, visited the Substation during the week. Dr. Harlan and Mr. Anthony have arrived at Aberdeen and are engaged in technological work with barley.

Aberdeen is rapidly becoming a sheep and wool center. Over one million pounds of wool were shipped out of Aberdeen in the past two months. Prices ranged from 37 to 75 cents per pound. Much of this year's clip was contracted at 37 cents per pound six months before the clip was made.

WASHINGTON:

July 9.

Adams Branch Experiment Station (Lind)./ The hot, dry, weather has affected the crops and probably will reduce the yields. Had it not been for the comparatively cool nights crops would have been severely injured. Corn, flax, sorghums, and millet are in poor condition. Cereals and peas are the only crops that give much promise, although fall rye was burned and shriveled in some cases.

Grain is headed, the earlier varieties being in the milk stage. Peas are ripening and give promise of producing a profitable yield. Haying probably will begin next week and harvest the following week. Labor is scarce and wages will be very high. Five and six dollars per day is being demanded in some cases by ordinary harvest laborers.

Average maximum temperature for the past week, 88.2 degrees; average minimum, 50.5 degrees.

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July 27, 1917.

OFFICE NOTES.

The second annual conference of western agronomic workers will meet at Pullman, Wash., and Moscow, Idaho, on July 31 to August 2, inclusive. The following members of the Office have been authorized to attend the meetings: E. L. Adams, L. C. Aicher, C. R. Ball, L. R. Breithaupt, C. H. Clark, J. A. Clark, J. W. Jones, C. E. Leighty, F. J. Schneiderhan, D. E. Stephens, and C. W. Warburton.

Mr. C. H. Clark writes from Mandan, N. Dak., on July 21, as follows: "The weather still continues hot and dry. Hot winds during the past two or three days have done much damage. Local showers have not benefited crops. Flax, although ripening rapidly, is as yet apparently unhurt and looks better than it did a week ago. Wheat on the Station still looks good and is plump and in the soft doughstage. Oat harvest was begun on the rotation plats Friday and fair yields are expected."

Mr. Warburton writes from Ames, Ia., on July 23, as follows: "The season is about two weeks late, as harvesting was not begun on the Station until the 20th. Early oats are being harvested rapidly. They will yield well and be of excellent quality. Late oats are filling well, as conditions for growth are excellent. Wheat winterkilled badly and is therefore thin and very late, while scab is prevalent in many of the plats. No wheat has yet been harvested. Corn is late but is growing rapidly. Rains early last week and on the 22nd and 23rd were very beneficial and did not interfere materially with haying and harvesting."

Mr. Carleton returned on July 25 from Louisiana where he investigated conditions pertaining to the effect of salt water in preventing rice irrigation.

There has been raised in the Department of Agriculture the sum of $2518.30 out of which two ambulances have been ordered for the use of the Red Cross. In addition to these the Bureau of Markets will donate a third ambulance. This and one of those donated by the Department will be sent for service in France. In response to an urgent request from the District of Columbia chapter of the Red Cross the third ambulance will be donated for special use in the camps of the District.

A substantial surplus will remain in the fund, the disposition of which has not yet been determined. Some persons have expressed a desire to contribute monthly to a Department Red Cross fund, and it has been suggested that the fund be allowed to accumulate until a further call comes from the Red Cross or until it may be necessary to replace the ambulances in case they are destroyed.

FIELD NOTES.

TEXAS:

Amarillo Cereal Field Station. July 21. The small grains are all harvested and thrashing will begin some time next week. The drought was broken early in the week by a precipitation of 1.58 inches. The soil is wet to a depth of 5 or 6 inches. The row crops are making splendid growth now and with an average rainfall from now on probably will produce good yields of grain sorghums.

Maximum temperature for the week, 99 degrees (July 14); minimum, 66 degrees (July 16); precipitation, 1.58 inches; evaporation, 2.1 inches; average wind velocity, 7.7 miles per hour.

OKLAHOMA:

Woodward Field Station. July 17. There has been practically no rain since the first of the month and broomcorn seeded at the thicker rates is suffering from the dry, hot weather.

The following observations were made by Mr. Sieglinger on a 5-day automobile trip through Oklahoma, Texas, and New Mexico: Conditions of drought were noted on the entire route. Crops looked worst from a few miles south of Hobart, Okla., to Snyder and around Lawton and west to Altus. In that territory grain sorghums and corn were curling and burning badly, while cotton was small and had been reseeded once or twice. The wheat acreage was small. The best wheat acreage observed was in the central part of Custer and Washita counties of Oklahoma. Between Hollis, Okla., and Wellington, Kans., a number of good fields of dwarf milo were seen.

At the Dalhart Field Station, Dalhart, Tex., the grain sorghums are late.

Near Lawton, Okla., quite a number of fields of broomcorn were affected by drought. Broomcorn in the southeastern part of Beaver County and the northern part of Ellis County, Oklahoma, is from 6 inches to 1 foot high and looks fairly good and is not suffering from drought.

KANSAS:

Fort Hays Experiment Station (Hays). July 19. Harvesting of small grains was finished on July 9 and thrashing on July 16. Winter wheat varieties are averaging about 15 bushels per acre. Spring grains are practically a failure. Grain sorghums and corn are suffering from lack of moisture and will be a failure if it does not rain soon. Wheat on the Station farm has been harvested and will yield about 7 bushels per acre. The second crop of alfalfa is being stacked, making about one-half ton to the acre.

Precipitation for the year to July 1, 5.99 inches; normal for the first six months of the year, 11.29 inches; total precipitation from July 1, 1916 to July 1, 1917, 11.29 inches. This is the lowest on record with the exception of the year 1894-1895, when 8.02 inches were recorded.

WYOMING:

Cheyenne Experiment Farm (Archer). July 21. Winter wheats are fully headed and are beginning to ripen. Spring-grown grains, although stunted and short on account of the dry weather, are in various stages of heading. The April 16 date-of-seeding experiment with Kherson oats is beginning to ripen. Rodents and rabbits have caused considerable injury to a number of plats located near the grass land.

Corn is making good growth, but within the last few days the effects of the drought have become evident. Gehu and Montana spotted, two varieties found in the "observation test" with corn, although not more than 12 to 15 inches high, have begun to tassel.

Winter rye in field plats has begun to ripen and probably will be ready to harvest within a week.

Mr. J. Allen Clark, of the Office, visited the Farm on July 14. Mr. L. D. Willey, in charge of the Dry-Land Agriculture station at Sheridan, Wyo., was a visitor on July 21.

Maximum temperature, 92 degrees (July 21); minimum, 45 degrees (July 15); precipitation, 0.37 inch.

SOUTH DAKOTA:

Highmore Substation. July 23. Although weather conditions are not so favorable as last year, wheat yields will be higher and the quality will be better as no rust has developed in the western two-thirds of the State. In the eastern third rust has been reported for nearly two weeks. Flax will make a fairly good crop throughout the State. Early oats and barley are being cut and will make an average yield. Winter wheat and winter rye are mostly cut and probably will make a good yield. Corn looks good throughout the entire State.

In the northern part of Hyde County about 5 per cent of the late oats have been cut for hay because of the drought. Other crops probably will produce fair yields. Throughout the county more grain will be produced than last year. A heavy hail storm did severe

damage in eastern Hyde and western Hand counties over a strip of country 5 miles wide and 40 miles long.

Precipitation from July 1 to date, 1.09 inches, which is below normal.

Bellefourche Experiment Farm (Newell). July 23. Early oats and barley and Prelude wheat are nearly ripe. All grain below the ditch has been irrigated twice and will be given another watering.

On the dry land crops are burning up because of the continued drought. Harvesting of winter rye has been begun.

The third annual Farmers' Picnic was held at the Farm on July 21 with an attendance of approximately 1,500.

Mr. J. Allen Clark, of the Office, and Mr. Manley Champlin, of the agricultural experiment station, Brookings, S. Dak., visited the farm during the week ending July 21.

NORTH DAKOTA:

Dickinson Substation. July 21. Winter rye is almost ripe and winter wheat is beginning to ripen. Nearly all varieties of spring grain are fully headed. Corn and beans look good but need rain. The yields of all small grain will necessarily be light even if it should rain soon. Because of the short straw and the light hay crop some grain fields will be mown for hay. Durum wheat still looks good. A large field of winter wheat in the vicinity of the substation which was drilled in long stubble looks fairly good.

The drought has continued unbroken during the past week except for light showers. The weather has been clear and hot with but little wind. Maximum temperature, 95 degrees. On several days the temperature was above 90 degrees.

Northern Great Plains Field Station (Mandan) July 23. In spite of the drought crops are doing well. Sixty Day oats are fully ripe and are being cut. Though they are shorter than normal they bind well. All other varieties of oats, early barleys, and early flax varieties are beginning to ripen. Traces of smut have appeared on some of the wheat, oats, and barley, but so far there has been no indication of rust on any of the varieties.

Maximum temperature for the week ending July 16, 89 degrees (July 11); minimum, 51 degrees (July 16); precipitation, 0.08 inch.

Maximum temperature for the week ending July 23, 100 degrees (July 22); minimum, 53 degrees (July 23); precipitation, 0.10 inch.

NORTH DAKOTA:

Williston Substation. July 21. In spite of the dry, hot weather of the past week, small grains that are well headed seem to be filling fairly well. Some of the barley varieties have been cut and the remainder will be ready soon. The early oats and Prelude wheat are also ripe. Barley varieties grown on potato ground were too short to tie with the binder. The same varieties of barley planted at the same time on corn ground were tall enough to cut and tie with the binder.

Maximum temperature, 96 and 98 degrees nearly every day during the week. No precipitation.

UTAH:

Nephi Substation. July 16. Winter wheat is beginning to ripen and because of the dry, hot weather probably will mature faster than is desirable. Spring cereals are fully headed and several of the plats are burning quite badly, particularly those seeded on land that was cropped in 1916. Tilled crops look quite good.

Plowing for fallow is still in progress on the Levan ridge.

Maximum temperature for the past week, 100 degrees; minimum,49 degrees; precipitation for June, 0.21 inch; for July to date, 0.05 inch.

Mr. J. Allen Clark, of the Office, inspected the cereal work on July 13, and Director F. S. Harris, of the Utah Experiment Station, President E. G. Peterson of the Agricultural College, and Mr. J. W. Paxman and Mr. A. F. Bracken of the Extension Service in Utah, were visitors on July 16.

July 22. The weather continues hot and dry. Winter wheat is ripening very fast and a large part will be ready for harvest this week. Winter barley, spring barley, and early varieties of spring oats were harvested during the week. Grasshoppers are injuring the second crop of alfalfa.

OREGON:

Eastern Oregon Dry-Farming Substation (Moro). July 21. The harvesting of the nursery has been finished. This comprises 1,538 16-foot rows of wheat and 150 20-foot rows of barley. The hot, dry winds of the past two weeks have "cooked" most of the spring grain and have so seriously injured the winter grain that it is probable that the yields in eastern Oregon will be greatly reduced. Some of the spring grains are green but perfectly cured. Only those farmers who practiced good tillage methods are getting a fair crop this year.

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FIELD NOTES.

VIRGINIA:

Arlington Farm. Aug. 3. Thrashing of cereal varieties grown in field plats has been finished. The work of thrashing nursery rows is still in progress.

The following is a list of the highest yielding wheats grown in a comparative test:

C. I. No.	Variety.	Yield in bushels.
1912-2	Bluestem selection	56.1
3598	Fultz	53.4
3489	Poole	53.1
1915	Purple Straw	52.7
1733	Dawson Golden Chaff	52.4
1923	Fultz	51.4
3614	(Hybrid)	51.2
4204	Bearded Winter Fife	50.7
3326	Currell Prolific	50.1
1911-1	Bearded Purple Straw Sel.	50.1

The following is a list of the ten leading varieties of winter barley grown in a comparative test:

C. I. No.	Variety.	Yield in bushels.
206-1	Han River	52.8
646	Tenkau	50.5
901	Pidor	48.5
277	Scottish Pearl	46.3
754-3	Nakano Wase selection	45.3
754-2	Nakano Wase selection	44.6
257	Tennessee (av.10 check plats)	41.8
754-1	Nakano Wase selection	39.7
519-8	Wisconsin Winter	39.6
895	Cusado	39.2

Maximum temperature for the two weeks ending Aug. 1, 100 degrees (July 31); minimum, 64 degrees (July 29); precipitation, 2.65 inches; precipitation for the month of July, 7.81 inches.

KANSAS:

July 27.

Fort Hays Experiment Station (Hays). / All row crops are suffering greatly because of the dry, hot weather, in spite of a precipitation of 0.85 inch on July 22. Corn can not recover. Sorghums will produce a small quantity of grain if the weather is favorable during August and September. Corn will be cut next week for silage and feed if the drought continues and the sorghums will be harvested next.

Reports indicate that corn in Lincoln County is a complete failure and that all other row and feed crops will not mature unless rain falls soon.

In western Kansas crops are severely affected by the drought.

WYOMING:

Cheyenne Experiment Farm (Archer). July 28. Winter wheat varieties, with the exception of Buffum No. 17, have begun to ripen. Spring wheat, both common and durum, barley and oats, except Banner (C. I. No. 732), are fully headed. Blackhull barley (C. I. No. 878) has begun to ripen. Corn, beans, and potatoes are making good growth. Rye heads are long and well filled. A good crop is expected and harvesting will be begun on July 30.

The drought was broken on July 22 by a local precipitation of 0.53 of an inch, which was of much benefit to crops. Rain is needed badly throughout this section.

Maximum temperature for the past week, 92 degrees (July 21, 24 and 25); minimum, 54 degrees (July 22); precipitation, 0.76 of an inch.

Mr. Warburton visited the Farm on July 28 on his way to Pullman, Wash.

SOUTH DAKOTA:

Highmore Substation. July 31. The work of thrashing grain is in progress. The yield of winter rye is from 20 to 50 bushels per acre depending on date of seeding and previous preparation. The seed is of good quality. Early oats are mostly thrashed and have produced from 30 to 50 bushels per acre. Barley and flax have made good yields. Corn was severely injured by the high temperatures of the past week. The maximum was 108.5 degrees, accompanied by high winds, which practically destroyed corn in the tassel. A precipitation of 0.70 of an inch on July 30 was of much benefit to crops.

Mr. Stanton visited the Substation on July 28.

MINNESOTA:

University Farm. (St. Paul). July 30. The work of crossing spring wheat varieties was finished during the past week. There is a fairly heavy stem rust epidemic in the rust nursery which is spreading rapidly.

There is much stem rust in the fields throughout the State and it probably will be serious in many sections. The hot, dry winds of the past week injured the small grains in the vicinity of the Farm.

There has been sufficient precipitation to make crops generally look very good. Winter rye has been cut and will yield about 25 bushels per acre. Winter wheat will be ready to harvest soon, while oats and barley are just beginning to ripen.

NORTH DAKOTA:

Agricultural Experiment Station (Fargo). July 23. Winter rye was harvested during the past week and will make a fair crop. Barley and early oats are nearly ready to cut. The continued dry, hot weather is forcing all crops. The precipitation for July to date is 0.64 of an inch, in five scattered showers.

It was observed on a recent automobile trip along the main line of the Northern Pacific Railroad, and south of Fargo, that the crop outlook as a whole is not very promising. In the western part of Cass and Barnes Counties there will be probably an average crop. Westward toward the Missouri River the fields have a spotted appearance due to local precipitation. Some fields are unfit to harvest and some look fair. This condition also exists in Logan and Emmons Counties.

There has been a large increase in the flax acreage in Logan and Emmons Counties. The outlook for flax is a little better than for other spring grains but rain is needed badly.

There is also a large acreage of winter rye in the area mentioned, which probably will yield about half a crop.

Dickinson Substation, July 28. During the past week winter rye, Prelude wheat, and Sixty Day and Kherson oats were harvested. The yield of all crops will be light. Some of them will be cut for hay. Grain is ripening prematurely because of the continued dry, hot weather and the straw is very short.

Winter rye in the vicinity of the substation has been harvested and probably will yield a fair crop. The general harvest will be begun in about a week.

Maximum temperature for the past week, 108 degrees (July 27); no precipitation. There has been no rain since July 4 when the precipitation was 0.70 of an inch.

The following were visitors at the substation during the week: Messrs. C. R. Ball, Chas. H. Clark, and J. A. Clark, of the Office of Cereal Investigations; Director Thos. J. Cooper and Prof. R. C. Doneghue of the North Dakota Agricultural Experiment Station; Supt. W. A. Peterson of the Northern Great Plains Field Station; Supt. Thompson of the Edgeley Substation; and Mr. J. M. Stephens, traveling field assistant in charge of northern group of Dry-Land Agriculture field stations.

Northern Great Plains Field Station. (Mandan) July 30. Crops look surprisingly good in spite of the extremely dry, hot weather. All of the Sixty Day oats have been cut and probably will make a fair yield. White Smyrna barley has also been cut; although very short, the heads are well filled and the bundles are very heavy. Other varieties of barley and the wheat and oat varieties appear to be ripening well. Flax (C. I. No. 13) is fully ripe now and some other varieties nearly so.

The leaves on the corn curled up during the extreme heat and might have been destroyed except for the rain on July 29. Some of the leaves did not recover.

The temperatures of the past week are the highest on record since the Station was established. Maximum, 107 degrees (July 29); minimum, 50 degrees (July 30); average maximum, 97 degrees; average minimum, 65 degrees; precipitation, 0.58 of an inch; precipitation for the year to date, more than 5 inches below the 40-year average for the same period. At Bismarck a maximum of 107.5 degrees was recorded, the highest in 40 years.

The soil thermograph registered a maximum of 90 degrees at 6 p. m., July 28 and a minimum of 67 degrees at 7:30 p. m., July 30.

Williston Substation. July 28. Barley, early oats, and early varieties of wheat have been cut. All varieties of oats are nearly ripe.

Very few fields of wheat in the vicinity of the Substation have begun to ripen.

In spite of the continued dry, hot weather, wheat kernels are filling out and in most cases the heads are filling to the very tip. In the dry years of 1910 and 1911 when the heat injured wheat while in bloom the yield of the durums was very low because many heads did not completely fill. This year the durums in this section probably will outyield all other kinds of wheat; wherever examined all heads have been found to be completely filled and the kernels generally plump. Some fields may yield 10 to 15 bushels and some as high as 20 bushels per acre. The latter are on summerfallowed land or new or corn ground.

Marquis wheat is very short in straw but has filled well.

With the exception of wheat there are few fields of any grain that look at all promising. Hot winds during most of the week have damaged all crops.

Maximum temperature for the past week, 1.09 degrees (July 27); minimum, 57 degrees; precipitation, 0.05 of an inch.

UTAH:

Nephi Substation. July 28. All winter cereals were harvested during the past week, with the exception of a few plats of winter oats. Grain ripened very fast this year and as a consequence probably will be lower in grade than normal. Spring cereals are ripening very fast and yields will be low.

Tilled crops have a good color but are making very slow growth.

Grasshoppers are doing considerable damage to alfalfa, wheat, and row crops on some of the irrigated farms at Nephi.

The weather is cooler since the thunderstorms of yesterday and today.

WASHINGTON:

Adams Branch Experiment Station (Lind). July 25. The unusually hot weather of the past week ripened the wheat very rapidly and harvest was hastened. It was not expected to begin this work until August 1. Grain in the varietal experiments is all cut and ready for thrashing. The engine ordered some time ago has not yet been received, however.

The daily high temperatures and hot winds severely injured wheat in some cases. While it is difficult to estimate the extent of the damage, it is probable that yields have been cut at least 30 per cent and the quality injured from 15 to 30 per cent.

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OFFICE NOTES.

Mr. Rothgeb left Washington on Aug. 3 to visit points in Illinois and Oklahoma to investigate conditions relating to grain sorghum and broomcorn investigations.

Mr. Childs reported in Washington on Aug. 9 to assist in the preparation of two Farmers' Bulletins on wheat and rye cultivation in the southeastern states, which are urgently needed in the present emergency.

MEMORANDUM.

Owing to the press of work incident to present conditions, the transfer of a number of clerks to other Departments at salaries higher than we can pay, and the difficulty of securing certifications from the Civil Service Commission for new clerks, the Cereal Review will appear irregularly for a time and may have to cease altogether until more help is available.

Field men will kindly continue to send in notes for the Cereal Review.

FIELD NOTES

OKLAHOMA:

Woodward Field Station. Aug. 4. The effects of the drought are particularly severe on broomcorn, in the early seedings of which no heads have been formed. The kafirs apparently have stood the dry weather better than any of the other sorghums, as they have merely stopped growth and need rain.

In the varietal experiments with sorghums, the kaoliangs are attempting to head but are not doing well. Feterita is heading but will make a very light yield.

Precipitation for the month of August to date, 0.24 of an inch (Aug. 1); for the year to date, 7.05 inches.

WYOMING:

Cheyenne Experiment Farm (Archer). Aug. 4. Winter wheat is ripening rapidly and will be ready for harvest next week. A number of barleys, early oats, and Prelude common spring wheat (C. I. No. 4323) are beginning to ripen. During the week first silks were observed in a number of varieties of corn.

Crops and pastures in this section were much improved by a general precipitation of 0.50 of an inch on July 30.

Maximum temperature for the week ending Aug. 3, 92 degrees (Aug. 3); minimum, 47 degrees (Aug. 1); precipitation, 0.57 of an inch.

SOUTH DAKOTA:

Highmore Substation. Aug. 6. The weather the past week has been more favorable for crops. Temperatures have remained low and the humidity has been high. Grain has matured slowly, which has relieved the rush of last week when everything matured at once. Nearly all cereals

are harvested, with the exception of late-planted wheat and emmer. Grasshoppers have injured late oats severely and are practically destroying the emmer. Corn will make an excellent crop if not too greatly injured by the grasshoppers which are present in large numbers.

NORTH DAKOTA:

Agricultural Experiment Station (Fargo). Aug. 8. Barley and early oats have been harvested. Some early seeded flax was cut on August 4.

Maximum temperature for the last week in July, 110 degrees (July 28); average maximum temperature for the month of July, 85.6 degrees; average minimum, 58.3 degrees; precipitation, 0.74 of an inch, compared to a normal of 3.71 inches; precipitation for the growing season, April, May, June, and July, 4.39 inches; total normal precipitation for the same period, 12.94 inches. In spite of this lack of precipitation a good small-grain crop will be harvested at the Station.

Dickinson Substation. Aug. 4. Early varieties of wheat, oats, and barley and all varieties of flax were harvested during the week. Crops are ripening more normally than before because of cooler weather and a precipitation of 0.75 of an inch during the past week.

Harvest is becoming general in the vicinity of the Substation.

Mr. Stanton, of the Office of Cereal Investigations, and Mr. A. M. Christensen, Agent in the flax disease work at the North Dakota Agricultural Experiment Station, visited the Substation during the past week.

Williston Substation. Aug. 4. About half of the small grains have been harvested; the remainder are nearly ready to cut. The operation was delayed by the annual

picnic held on the grounds of the Substation on Aug 3. The attendance was unusually small as compared with the number present in previous years.

In the vicinity of the Substation barley has been harvested and the cutting of wheat was begun during the week. Considerable wheat is being mowed. In a few fields it was cut, however, and tied very well with a binder.

Maximum temperature for the past week, 99 degrees; minimum, 42 degrees; precipitation, 0.13 of an inch; precipitation for the growing season, April, May, June, and July, 4.45 inches; 36-year average for the same period, 8.86 inches.

MONTANA:

Judith Basin Substation (Moccasin). Aug. 1. All grain is headed and has begun to fill. Prelude spring wheat and the early varieties of oats and barley are beginning to ripen and will be cut in a few days. All grain is short. Spring wheat varies in height from 21 to 27 inches; oats, 21 to 26 inches; barley, 17 to 20 inches; and flax about 16 inches.

In the Judith Basin yields will be very light. It is doubtful if wheat will average 10 bushels per acre; much of the late-seeded wheat will not make any crop.

The ninth annual Farmers' Picnic was held at the Substation on July 27. The attendance was very good considering the dry year and poor condition of the crops. Approximately 3,000 people were present. About 500 automobiles were parked in the grounds at one time.